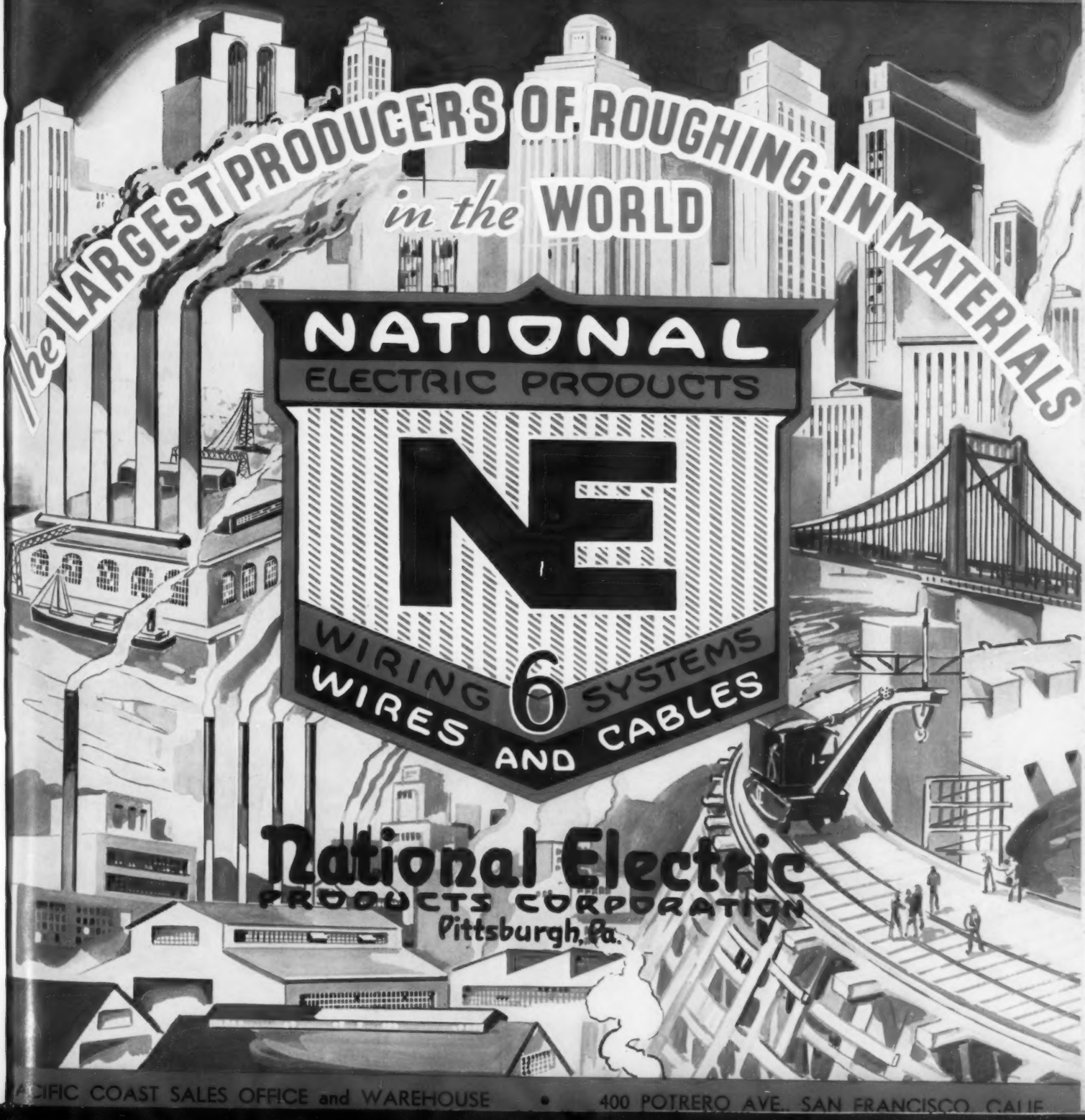
ELECTRICAL WEST

McGRAW-HILL CO. of CALIFORNIA | OCTOBER 1935 | PRICE 25c PER COPY



LET'S BREAK THE RECORD

This year should see all records broken in electrical range sales. Conditions are undeniably better—people have more money to spend, and last, but not least, women are being rapidly educated in the use of electricity for cooking.

We're doing all we can to help. By means of an extensive campaign in 170 newspapers—radio announcements—sales manuals—window displays—billboards and other advertising media—we are telling the story of electric cookery throughout Edison territory.

And we are certain that you, too, are putting forth your very best efforts. Between us, we should install electric ranges in more kitchens this fall, than in any previous year, to our mutual profit.

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

Edison

10-35

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ELECTRICAL WEST

With which are consolidated the "Electrical Journal," the "Journal of Electricity, Power and Gas," and the "Journal of Electricity."

ESTABLISHED 1887

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▼

• AN OUTSTANDING FEATURE of this issue for everyone in the industry is the Appliance Sales Manual found on pages 9-44. It will help the electrical dealer sell more merchandise; it will aid the salesmen of the utilities to help the dealer; it will open up new fields for the contractors and it will show engineers how to interest their friends in greater home electrification. It presents the whole story of appliance merchandising in a form that is clear, concise and instructive.

• UP IN THE CITY OF ROSES (Portland, to you) a robot orator has captured the public's imagination and he has a fine time telling the citizens about the service that the electrical utilities are rendering. Robot Kilowatt is his name and his job is described in the article on page 45. Read it and see if you, too don't agree that he is a very valuable employee.

• FOR THE ENGINEERS there is an interesting description of a new technique for meter testing on page 48. Also for the power house operator and the industrial maintenance engineer, there is the first article of a series on the correct steps for routine maintenance of various types of equipment. For those who want to compile a handy maintenance reference, this series, when complete, should prove valuable and helpful.

• DON'T FORGET the Pacific Coast Electrical Association conclaves to be held this month in San Francisco and Los Angeles. The complete details are covered in News of Note as are other important items particularly those on the recent decision on the Couer d'Alene petition for federal funds to build a competitive power system and a review of the A.I.E.E. meeting recently held in Seattle.

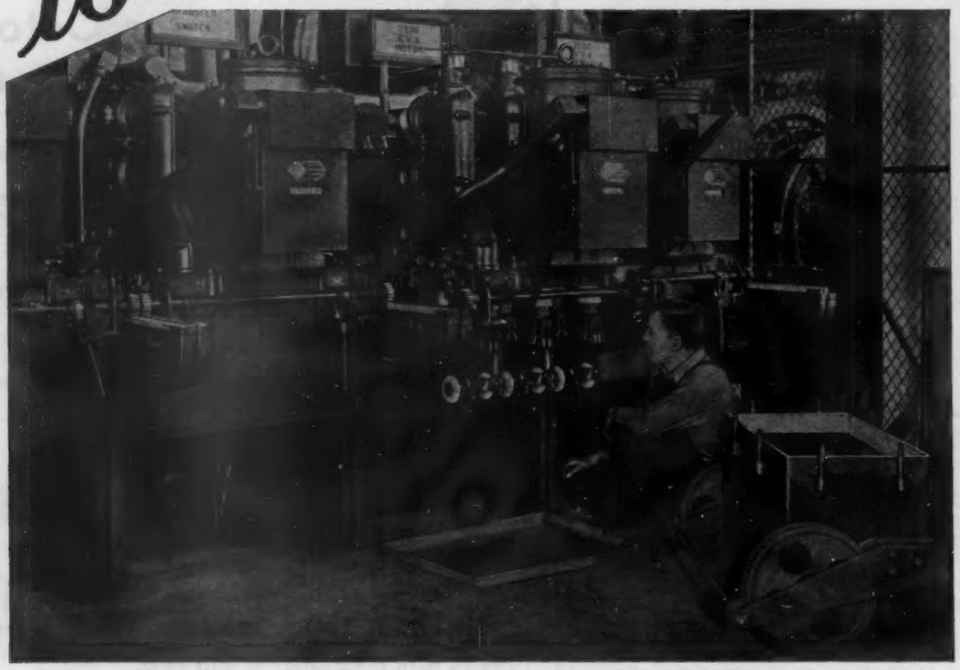
• ELECTRICAL WEST'S Business Building Brainstorm contest ends with this issue. Productive of many helpful suggestions for killing the power surplus pest, this series has proved that there are many people in the rank and file with load-building ideas of merit. Next month a new series will be instituted featuring an industry problem even more important than load building, namely, goodwill building. Watch for the details.

NEXT MONTH

• RURAL ELECTRIFICATION is a subject of national interest right now. Next month the editors will present a symposium on rural line construction practice here in the West where greater strides have been made in this field than any where else in the nation.

Easy to Check

Breaker inspection is simple with Allis-Chalmers Reyrolle Armorclad Horizontal Drawout Switchgear. View shows one breaker in disconnect position with tank removed for inspection of contacts.



Horizontal Drawout Armorclad Switchgear

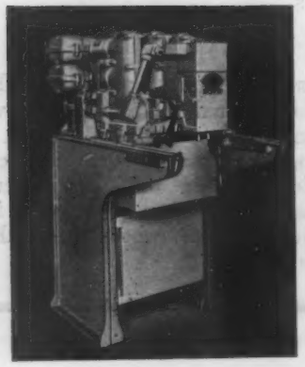
HORIZONTAL Drawout Armorclad Switchgear is designed to give maximum convenience and reliability in service, rather than for low manufacturing cost. It provides the following features not found in other types of metalclad switchgear.

1.—Breaker is made accessible for inspection by an easy horizontal movement, requiring little effort, and only a few minutes time.

2.—High tension buses and conductors are embedded in compound, permanently insuring insulation safety.

3.—Expulsion Port Breakers, which incorporate an arc extinguishing principle giving less arcing time, lower maintenance and wider application.

Write to Allis-Chalmers Mfg. Co., Milwaukee, Wis., for further information.



ALLIS-CHALMERS

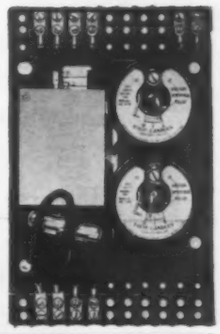
REYROLLE SWITCHGEAR

Complete EACH LIGHTING JOB WITH AUTOMATIC *PHOTRONIC CONTROL

Many utilities are finding it profitable to sell automatic control with each lighting job. By so doing, they are assured that the customer will receive full benefits from the job they designed. Otherwise, the control, or proper use of the lighting, must be left to guess-work or chance. They *complete* the sale . . . build customer good-will and insure a profitable lighting load . . . by installing Weston *PHOTRONIC Illumination Control. They choose PHOTRONIC Control because of its simplicity, dependability and many exclusive advantages. Every utility will be interested in the complete story . . . Weston Electrical Instrument Corporation, 577 Frelinghuysen Avenue, Newark, N. J.

OUTSTANDING ADVANTAGES OF PHOTRONIC CONTROL

1. Light intensity "on" ½ foot-candle up.
2. Light intensity "off" ½ foot-candle up.
3. Energy consumed operating—2 watts for 1 minute.
4. Energy consumed not operating—0.
5. Employs life-time, self-generating PHOTRONIC Cell.
6. Cell operates sensitive relays direct—no outside voltage—no amplification.
7. Sensitive Relays operate main circuit direct by small clock motor—no auxiliary relays.
8. Outdoor Model in water-tight box—for pole mounting.
9. Indoor Model in attractive case for wall mounting.
10. Installation simple—maintenance low.



*PHOTRONIC—a registered trademark designating the photo-electric cells and photo-electric devices manufactured exclusively by the Weston Electrical Instrument Corporation.

WESTON *Instruments*

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263 Colman Bldg.
Seattle, Wash.

PACIFIC COAST REPRESENTATIVES
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420 Market St.
San Francisco, Calif.

Electrical Engr. Sales Co.
Subway Terminal Bldg.
Los Angeles, Calif.

Life of Sangamo Bearings

PIVOT SHAFT OF STAINLESS STEEL
DUST CAP, GOLD PLATED
PIVOT OF NON-FERROUS, NON-CORRODABLE ALLOY
RETAINING RING, GOLD PLATED
SAPPHIRE JEWEL
PAPER SPACING WASHER
JEWEL SEAT AND LARGE OIL RESERVOIR
ADDITIONAL OIL RESERVOIR
BEARING SCREW OF DURALUMIN

THE life of a modern watthour meter may broadly be said to be directly dependent upon the excellence of the lower bearing construction. The latest Sangamo pivot provides a stainless steel shaft to which is welded a bearing tip of a new extremely hard non-ferrous alloy, not readily affected by organic or inorganic acids. A gold plated dust cap protects the pivot. The sapphire lower jewel is easily removable, for inspection or replacement, from the bearing screw which is designed to provide an ample oil reservoir. Added bearing life and lower maintenance are thus insured.

SANGAMO ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS

AMERCLAD

REG. U.S. PAT. OFF.

All-Rubber CORDS *and* CABLES

FEW manufacturers can point to a line of rubber sheathed cables encompassing the smallest cords, our "Plycord," on the one hand and the jumbo 4¼" diameter Fort Peck shovel cable on the other. We show here views of typical quality products which fall in the intermediate "Amerclad" range. Investigate them and their companion **Types Amerclad O.R. and Amerclad D**—the really oil resisting rubber sheathed cords. **Amerclad All Rubber Cords and Cables** are made by the **American Steel & Wire Company**, manufacturers of a complete line of Electrical Wires and Cables.

AMERICAN STEEL & WIRE COMPANY

United States Steel Corporation Subsidiary

Pacific Coast Distributors

COLUMBIA STEEL COMPANY

SAN FRANCISCO LOS ANGELES PORTLAND SEATTLE

ROEBLING

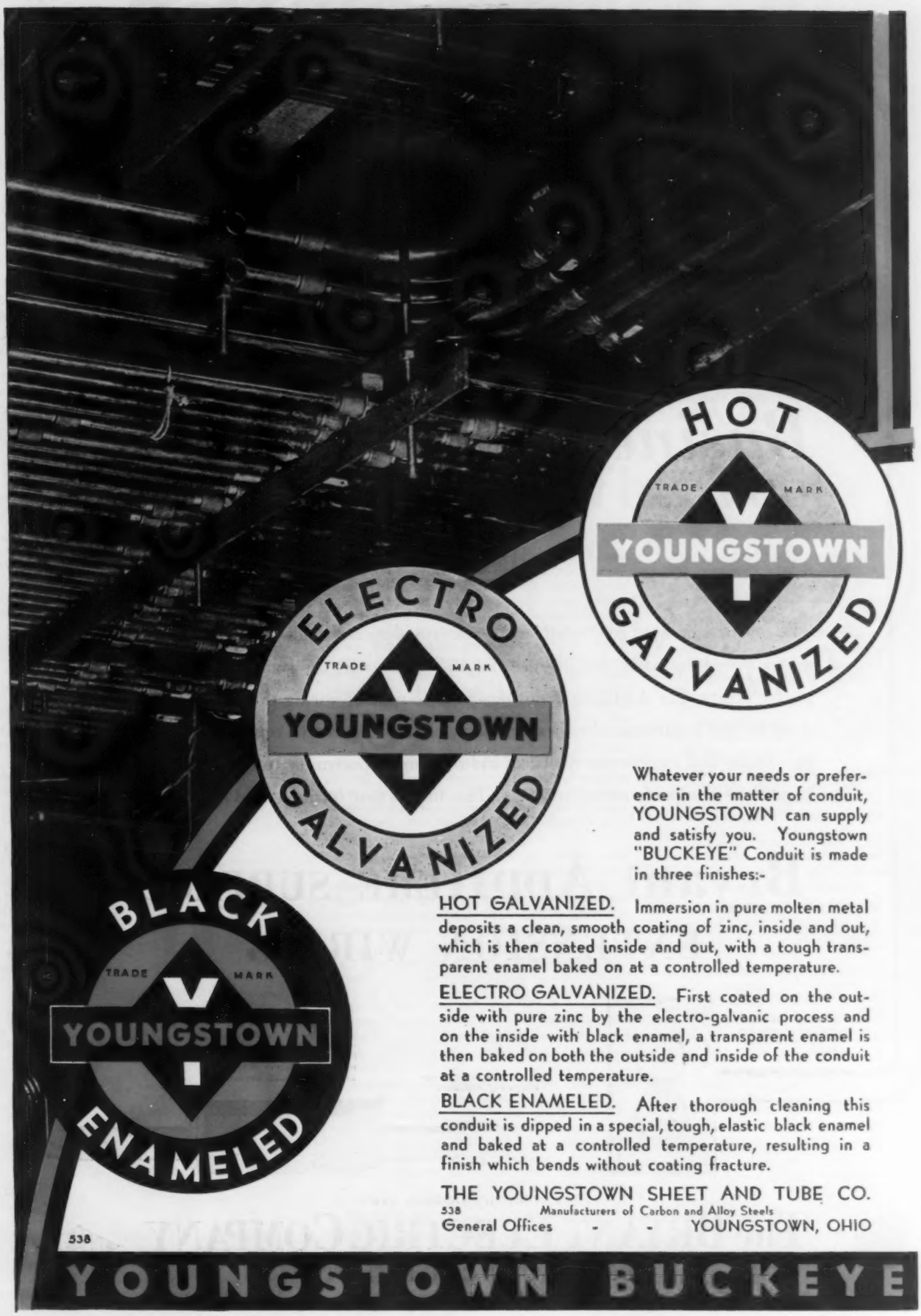
ROUND, square, and rectangular types. A wide range of gauges. A comprehensive variety of coverings including cotton; asbestos tape and cotton; silk; enamel; paper; enamel and single silk; enamel and single cotton.

Over 60 other types of Roebling Electrical Wires and Cables are also available

TRADE MARK JAR REG. U.S. PAT. OFF.

JOHN A. ROEBLING'S SONS COMPANY OF CALIFORNIA
San Francisco Los Angeles Seattle Portland

ONLY A FINE PRODUCT MAY BEAR THE NAME ROEBLING



Whatever your needs or preference in the matter of conduit, YOUNGSTOWN can supply and satisfy you. Youngstown "BUCKEYE" Conduit is made in three finishes:-

HOT GALVANIZED. Immersion in pure molten metal deposits a clean, smooth coating of zinc, inside and out, which is then coated inside and out, with a tough transparent enamel baked on at a controlled temperature.

ELECTRO GALVANIZED. First coated on the outside with pure zinc by the electro-galvanic process and on the inside with black enamel, a transparent enamel is then baked on both the outside and inside of the conduit at a controlled temperature.

BLACK ENAMELED. After thorough cleaning this conduit is dipped in a special, tough, elastic black enamel and baked at a controlled temperature, resulting in a finish which bends without coating fracture.

THE YOUNGSTOWN SHEET AND TUBE CO.
538 Manufacturers of Carbon and Alloy Steels
General Offices - - YOUNGSTOWN, OHIO

538

YOUNGSTOWN BUCKEYE

Ready-wired molding is cemented to the wall with special AddHere cement. No tacks, nails or screws.

AddHere Pendant "taps" the run near the ceiling with a special fitting, firmly anchored in place.

Seven-foot Pendant, with three-way convenience outlet, is available in attractive colors. White, Ivory, Tan, Gold, Peach, Green.

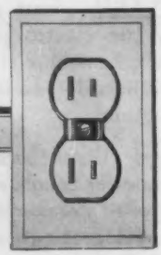
New Business

New Profits

The business created by "AddHere"— the revolutionary new surface extension material — is actually *new* business for the wholesaler, the contractor, and the public utility. For AddHere is not designed to replace wiring that is now being done by the legitimate electrical industry. It *is* designed to replace makeshift extensions and to give the electrical industry an opportunity to extend circuits in millions of *already wired buildings*. This means *new* business and *new* profits.

Bryant ADDHERE SURFACE EXTENSION WIRING

Circuit picked up from existing outlet by use of AddHere Frame.



End fitting for terminating run of AddHere.

Circuit can be "tapped" at any point to install this neat, compact duplex receptacle. Raceway, receptacle and all fittings available in four colors: White, Ivory, Green and Brown.

For complete information, write

The BRYANT ELECTRIC COMPANY

BRIDGEPORT, CONNECTICUT

NEW YORK CHICAGO SAN FRANCISCO

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OCTOBER 1935

Electrical West APPLIANCE SALES GUIDE

How to Use This Tool

This is concentrated sales medicine. Taken every day it will tone up your business, strengthen your selling, bring you healthy profits, prevent sickening losses due to poor judgment or dissipation of your time, money or energies. Boiled down into a few meaty words in these pages are *volumes* of sales advice and method. Possibly as you look through you'll be impressed that you already know every bit of it. That may be true. We have simply boiled it all down to fundamentals for your quick use. You will be able to clothe these basic outlines with your own thoughts and experience. To make them doubly effective, supplement them with any of the many sales training courses offered you by the manufacturers who make the appliances you sell.

Use these key outlines to check your selling, your advertising, your salesmen's efforts, your displays. Like a "check chart" use these to make sure you are overlooking nothing that will head your efforts toward results, not failure.

Remember the first principle—people buy *the services* your appliances can deliver them. They don't care so much what sort of gadget delivers these benefits so long as they *do* deliver. Therefore, put all your persuasion on *what people buy*. (You'll find these listed first, in bold type, opposite the individual appliance shown inside.)

Second principle—*to prove* that you have the appliance that will deliver the service wanted, tell of the good features of your appliance, the reasons why it can do as you promise. If your particular line has any special features, translate these first into terms of what they offer your customer in *extra* values, and then show why by explaining the feature itself.

Then bring in the standing and reputation of your manufacturer as further proof of delivery, and clinch it by naming someone who is using it and recommends it; and then *be sure to ask for the order* in a nice way.

Use these principles in *all* your selling —that includes advertising, displays, letters, window cards, announcements, radio talks, anything you use. Don't be afraid to talk the descriptive adjectives we use here. These are tested words. They create pictures that build up desire to buy and own. You must use words that make your prospect's mouth water for your product.

Boiled down into a simple rule for using this Appliance Sales Guide, then, to sell *your* appliance, show your prospect that your merchandise will—

1. **deliver the service (described in bold face type opposite that appliance in this manual) that your prospect needs,**
2. **because of the feature or reason next given,**
3. **built into it by your reputable manufacturer,**
4. **as has been proved by the testimonial of other purchasers, (name a few);**
5. **therefore it is worth far in excess of the price that you ask for it, whatever that is.**
6. **Then ask if you can't wrap it up or send it out.**

If this does not close the sale, repeat the process with other service features, other reasons, other urges to buy.

Sales built on this foundation stay sold. Apply these methods and see for yourself. If you do, you will find this Electrical West Appliance Sales Guide the most potent tool in your whole kit, the sales maker that brings you results.

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Planning Your Appliance Department + + +

Since people must see to buy, locate your appliance department where it will expose itself to the most people. This is especially important for small appliances; large appliances can be sold in the field. Both small and large sell best when seen most.

Decorate in cheerful, light tints—suggest cleanliness and coolness by a *clean* store, clean windows, clean looking salespeople. Clean talk, clean business methods sell better too.

Keep your appliances in groups—large appliances together, small appliances in related groups—i. e. all toasters together, all refrigerators grouped together. This helps you to *sell up* to better merchandise.

Keep a fair stock, enough to make attractive displays, to offer customers variety and immediate delivery.

Provide a comfortable means for your prospect to hear and see a demonstration. Have a few comfortable chairs, other thoughtful conveniences for your customers.

Think out a plan. Then follow it as well as you can. Keep awake to new ideas, though, so as to adjust to new opportunities.

Begin by analysing your territory. What kind of people—what type of income—standards of living—and plan accordingly. Don't bite off more than you can chew. You can always expand gradually with less headaches. Decide whether you are equipped to do a general appliance business or should specialize. Concentrate in an area within reasonable distance of your store.

Plan to make that territory know you and your shop. Be persistent in your work and your advertising. Repetition is what finally sinks in.

Provide for service of your lines—either yourself or make arrangements with some capable repair service organization. Many manufacturers provide service stations.

Keep up to date—read, yes, study your electrical magazine—ELECTRICAL WEST for instance—to keep in touch with trends, ideas, new products, selling plans and programs.

Buy Stocks Timed to the Market + + +

Balance . .

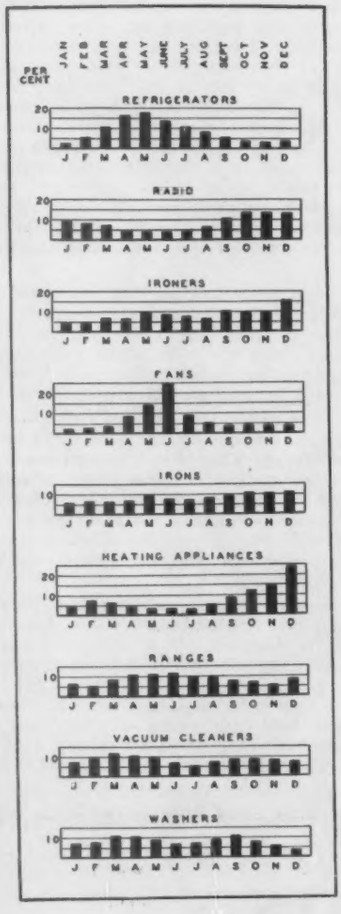
There is a lot of experience packed into the table at the right. No time to quote authorities now. But see how certain appliances seem to sell best certain months. Others sell best just when the major lines slump. Don't be flush in summer and starve in winter. Balance up summer refrigerator sales with winter electric kitchen, radio, small appliance sales.

Play Ball . .

Don't let prejudice or any other emotion blind you to the value of the sales experience of the utilities. More profits are made playing ball, or *running with it back of their interference* than bucking them. Most of them are anxious to help you sell these days. So time your buying and program to theirs. Might as well get the benefit of their big advertising and promotion. It only costs you a little cooperation—*pays you* in more sales.

Selection . .

Pay attention to *what* you buy. You want it to sell. Too many dealers spend most of their energies getting rid of disappointing, obsolete or orphan lines. *Closeouts* are usually expensive. Select merchandise from reputable manufacturers who are likely to stay in business. They help prepare the customer to buy from you by



national advertising. They help put on the cooperative promotional campaigns. They are worth buying from for your own self-interest.

Buy Wisely . .

Buy, don't just be *sold* something. Examine your merchandise for sales features, endurance, lack of comebacks. *Your* customer is going to bounce it in *your* face if it fails to deliver. It pays to reduce service costs at the source. These are the *important* things in buying: (1) National reputation of manufacturer. (2) Public acceptance of trade name. (3) Local jobber or manufacturer's representative and amount of support to be expected from him. (4) Amount and type of competition. (5) Margin of profit.

Deliveries . .

Order in advance. If you work out a rough plan for the year you can prepare for it by buying in time for deliveries. This insures customer delivery, allows you to get sales help material ready, mail out stuffers, advertise, and get your money's worth from your stock.

Cash Discount . .

Pay promptly so as to earn your cash discount. It is one of your surest profits. With today's financing helps (See page 27) you never had a better chance to keep on a sound basis.

Prepare – to Sell + + +

How to Prepare . .

Yourself—This guide will save you brain fag and discouragement. Don't try to absorb it all in one dose. But if it is refrigerator season, or any other season, or if there's a cooperative campaign on ironers or toasters this month, use it to refresh your memory on the sales points, the *customer desires*, of that particular appliance. The brief, pithy outline will bring you into focus on that appliance. With it in mind draw from all the manufacturer sales literature, sales courses, sales ideas, their *special* features so as to be ready to talk to your customers or prospects. *Then make up your own sales manual* from pictures and ideas you gain from all the material you see. If you make up your own book, no matter how modest, you'll be surprised how much better *you know it* and how much *easier* you will find *using* it.

Helpmeet . .

Your wife—if you are a dealer with a small store, your wife can and probably wants to be a real help. Go over these outlines with her. Study the manufacturers' sales material with these outlines as a guide. You will get at the *essentials* quicker. Train yourself and your wife, both, to *demonstrate* the appliance as you tell its features. *A salesman's wife* can be a big help obtaining telephone leads, organizing his calls, and in many other ways helping him to earn more income for both.

Crew . .

Your salesman—If you have salesmen, use these guides to concentrate their attention on the main selling points from the *customer's viewpoint*... Remember the *customer buys services that make her life pleasanter*. Use these guides as outlines to hold little sales meetings. No need to be elaborate, but get pointed toward the same goal. It will help make yardage. Supplement these with manufacturers' data. Be smart. *Set aside a definite time* for the jobber's salesman or manufacturer's representative to go over in detail all the construction and selling features of his line. He'll probably kiss you for the chance. And you can sell better when loaded with information.

Demonstrations . .

Demonstrate—Work out a regular demonstration schedule or routine for your appliance. Possibly the manufacturer has one you can use. But make it a habit—automatic—so that you won't forget a single feature. One little feature may be the one that makes the sale.

Promotion . .

Promote—Stage a little exposition or cooking school or hostess show of your own. Your manufacturers will help you if you get three or four to share. They'll do so provided the lines don't conflict. If your appliance association provides such assistance, take advantage of it. Read ELECTRICAL WEST for details of several such dealer shows.

Expositions . .

Local Expositions—Join other dealers in local appliance expositions, but don't go in over your head. Be represented if you can, but study your prospects, the set-up of the show and gage your own investment accordingly.

Display . .

Displays—Make your own displays if you can, or have someone with you who has original ideas. Use manufacturers' window material and bring customers to your store through the force of their national advertising with it. If you can, add a personal or *individual touch* to the stock display. It will preserve your own store identity. In windows, try to arrange the merchandise to *focus attention on a particular idea or appliance*. It is good practice every once in a while to load the window with a wide variety of small things. It has the effect of making people look the whole array over for anything interesting. At other times make a single appliance *stand out* by displaying it alone. The same principle goes for interior displays. *To attract*, remember, your displays must be *attractive*. Play up to seasonal ideas too, or local events.

Your Ads . .

Advertise—Keep before the public some way. If your local paper is a good one, try to run a small ad regularly. Don't be disappointed if a specific ad doesn't pull an immediate result. Let the public have time to soak up the idea. If you can't advertise regularly, at least try to *tie in with special campaigns*. Then use dodgers or broadsides. Use either some of the fine material manufacturers provide or modest blotters, stuffers or other ads of your own. But don't ever let the public forget you are in business.

Team Work . .

Associations—If there is an appliance bureau, society, association or league, hitch on to it. It means a stimulated market for *your* merchandise. Participate and help decide its programs—then you can be sure it will suit you or you'll know the reason why. All the successful merchants are smart enough to capitalize on such cooperative campaigns. Be just as smart.

The Utility . .

Utility-dealer — Utilities, these days, realize that dealers often know more about merchandising than they do, and also that dealers are their best salesmen. But dealers can still get lots of help from utilities—and *it's good business to work together*. Power company representatives should be informed on campaign details, sales ideas, cooperative plans. They *will be* if you ask it of them. Make them earn their money—and you will earn more too.

Home Service . .

Home Economists of the utilities and the manufacturers can bring you clever and profitable ideas. They have the woman's viewpoint which helps to sell to women.

Sales Manuals . .

Bill Smith, the salesman whose "*Sales Talks that Sold Appliances*" have run to guide you to better business. In fact sored by the Northwest power companies, makes direct applications of the ideas in this issue. Keep these on file and *use* them too.

Celebrations . .

Local events—After all you live and make your living in your city or town. So take part in its local activities. But *turn your participation into advertising* and goodwill to yourself and business. Tie your business, your appliances into the community life as closely as you can. It will help you to meet outside competition.

More Information . .

Write us for any information or added ideas—ELECTRICAL WEST is on the job to guide you to better business. In fact all the trade magazines should be soaked up—they contain profit-making ideas.

+ + A Guest at

Table Appliances,

Offer Your Customer These Services—

A reputation as a clever hostess—

Can arrange an entire buffet meal so that she need not get up and down all through it, either to watch food in the kitchen or serve it. Can stay with her guests. Adds to conversation to point with pride to her "electric servants". Her guests like to see food cooked before them and discuss it. Can be a guest at her own table and parties.

Added charm to her home—

Modern styling, attractive lines, simple detail, enhance any home setting.

Grills and Sandwich Toasters...

Delicious quick luncheons or snacks—

Just the thing for mid-day meals, late suppers, as well as breakfasts. Quickly set up and operated.

Better cooking results—

No danger of forgetting or letting something burn. Food is hot when served.

Such a versatile helper—

Really this is several appliances in one. It can be used in case of a party, when the range is all occupied, to make coffee, keep something warm; as a small table stove for sauces or chocolate. It fries small steaks, cooks bacon and eggs, as well as toasting all kinds of special sandwiches.

[Your own brands have special features. Interpret these in similar terms. Bring your manufacturer's name in as a guarantee of durability and performance. Tell of someone who uses and recommends.]

...Cookers and Casseroles

Really save money and time—

A little electric oven, it offers all the savings of electric cooking: less shrinkage of meats, cooks with stored heat, without waste, an entire meal at once; makes possible the use of cheaper cuts; can bake a few potatoes at a time; needs no attention.

Improved cooking, healthier too—

Slow, even cooking is best. Makes toughest meats tender. Uses little water so retains all natural juices and flavors, ordinarily washed out with water they are cooked in.

"Smelly foods" cooked without odors—

Foods with strong odors, fish, onions, cabbage, are cooked with steam, and do not release their odors to "smell up the house".

Summer comfort—

Doesn't heat the kitchen, since the insulation retains it. The same insulation keeps dainties cold for long periods.

Warm food for picnics, outings—

Puts new zest into a picnic; sandwiches can give way to a well balanced warm meal taken along.

Sterilizes dishes or bottles—

Baby's bottles or dishes used by those whose illness is communicable, these sterilize just the same way as a doctor sterilizes his instruments. Has dozens of other uses.

Toasters...

Just the right kind of toast—

Neither too dark or light, just as you like it. Automatic features take care of this. No burned toast, ruined dispositions.

Saves time and watching—

Can do other things while toasting. Can even set table, toaster and percolator for husband to get own breakfast, successfully too, while she snatches a few extra winks. He can't fail or mess things up.

Adds sparkle to parties—

Everyone can help prepare refreshments, helps conversation, food tastes better appetizingly served from tray set with relishes, jams, etc. Hors d'oeuvers on toast better than crackers.
(Read your manufacturer's literature for other selling features or devices.)

...Waffle Irons

Fifty-six kinds of waffles—

can be made on a waffle iron. (Investigate these and feature them, for they give added reasons for owning.) An endless variety of tasty delights for all occasions, breakfast, luncheon, late suppers. Reputation for cleverness easily attained by trying these new or different recipes.

Makes cakes and cookies without heat or fuss—

Ideal for summer cooking. Waffle pattern fills with creams and fillings better than ordinary cake. Unusual shortcake idea.

Peeking or failures unnecessary—

With modern heat control and indicating lights, etc., every waffle is turned out perfectly.

Her Own Table + +

All of Them,

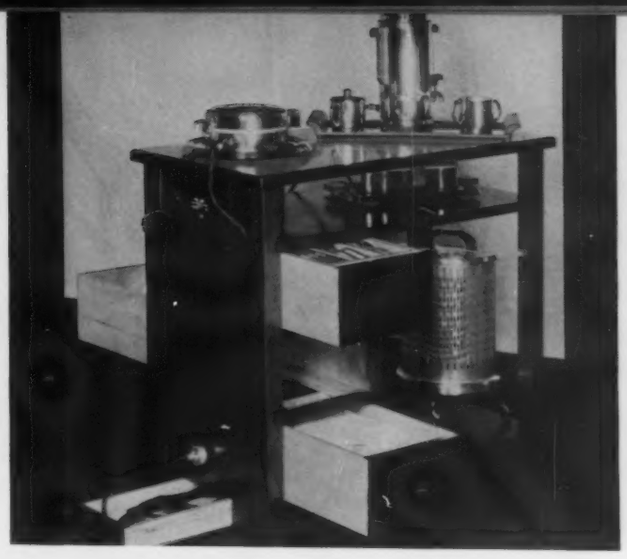
—Because of These Reasons:

Less bother and housework—

Can cook quickly right at the table instead of from kitchen. Saves steps. Easy to care for because of modern durable finishes. Cooler in summer. Cozier to serve in a warm room in winter.

Real economy—

in operation because quantities cooked are just enough to suit the occasion. If only a little snack is wanted, no need to light and heat a large oven. Economical to own if well selected from reputable manufacturers; will last a lifetime.



...Plate and Buffet Warmers

Sizzling steaks and hot dishes—

More than half the good taste comes from hot dishes served hot—steaks sizzling, roasts steaming, meat pies, scalloped potatoes, baked beans bubbling. A hostess is "made" by such thoughtfulness.

Warm food for late arrivals—

Breakfast or dinner kept warm in spite of delays. Tempers saved, flavors retained. Food not wasted by throwing away uneaten. Second servings as tasty as the first. Cereals crisped quickly; toast kept hot.

Even finest restaurants cannot provide more

Successful maitres provide such touches as something extra special, now home can do as well. Extra liners for buffet warmer allow quantities to be prepared, brought from oven as needed to replenish supply, for large parties.

Coffee Makers and Percolaters...

Consistently good coffee—

Method always the same, results are always the same (good point with brides). Better taste. Bitter oils, released by boiling, not brought out by these methods.

Healthier, no after effects—

Coffee made right does not have ill effects, cause sleeplessness. Scientific method, as blenders themselves make it. Does not get stronger on standing.

Coffee gives a cook her reputation—

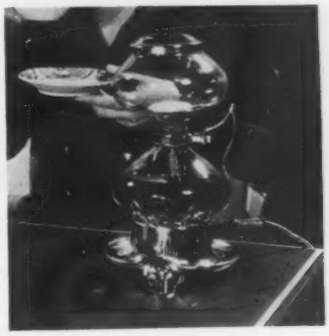
Ordinary meals made better by good coffee. Poor coffee often spoils a good meal. Reputations are made and broken on coffee distinctions.

Saves time and watching—

Can be prepared night before, ready to start at flip of switch in morning.

Amazingly useful—

Tiny electric stove has dozens of uses, heating water, boiling eggs, heating baby's milk, melting chocolate, etc.



...Egg Cookers, Bottle Warmers

Does its own watching—

Cooked just the way you like them every time and never a moment's thought to watching or waiting. Cooks right at the table. No need to get up to heat water, time or bother with eggs.

Poaches and fries too—

By breaking them into a small buttered cup eggs may be steamed, fried, poached or scrambled by placing under the dome.

A really safe bottle warmer—

Timing itself, with no danger of overheating or underheating, using but a trifling amount of current for a few moments, nothing to get out of order, turns itself off automatically when the water is dried out. No need to get up, even, for it can operate right at the bedside.

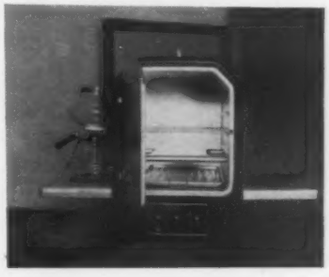
Table Stoves and Ranges...

Clean heat anytime, anywhere—

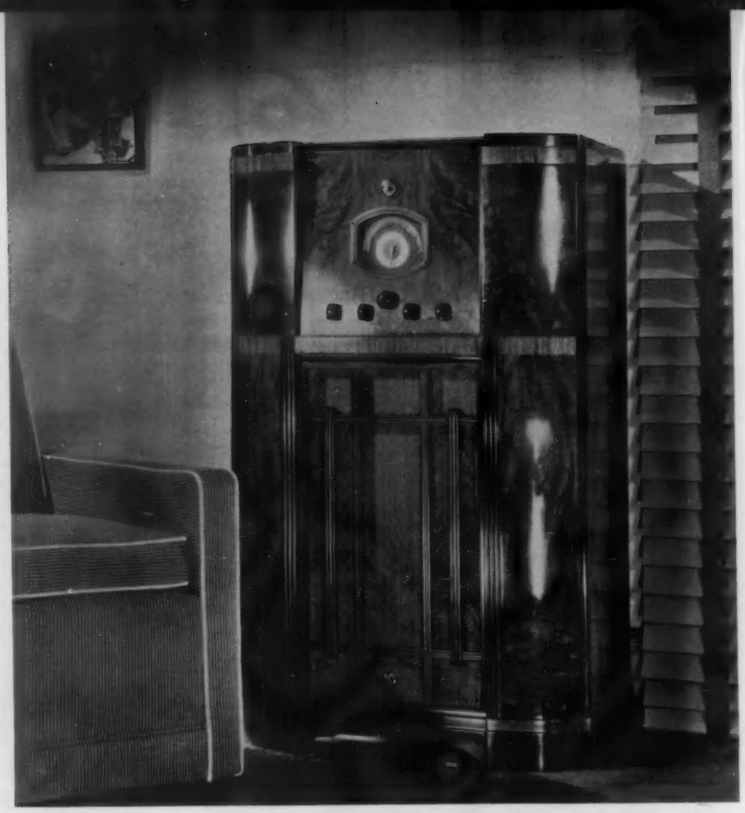
All the cleanly features of electric cooking, portable, available anywhere that there is electricity. At beach cottage, country house, cabin in the hills, in the basement for heating starch on washday, boiling clothes; in the workshop to heat glue, warm water, heat compounds. A simple hot plate is versatile. It can steam inhalents in the sick room with safety. In the kitchen it can do odd chores when the range is all occupied.

Small apartments can cook big meals—

Compact little stoves with ovens, casseroles, grills or other combinations of features make life livable in a furnished housekeeping room or tiny apartment. *(Study the particular features of the line you offer and tell about it in terms of the electric cooking services listed on page 20.)*



Entertainment + +



Is What Your Customer Buys

Time was when gadgets, new discoveries made selling points, but now the purchaser wants entertainment. So tell what the new developments mean in terms of better reception, lack of interference from other stations, noise elimination, better quality of tone, truthfulness of sound reproduction. Telling how many tubes used to impress but now it suggests expensive upkeep. So if you mention tubes tell why they bring better entertainment.

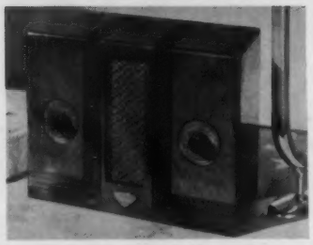
Individual pleasure in a second set—

Suggest that the old set, if still working nicely, be given the children to hear their own kind of programs; or placed in a bedroom, or the kitchen to hear home economics talks more conveniently. (This solves the trade-in problem.) A new set will provide individual choice of programs to different members of the family.

A beautiful addition to home decoration—

The modern styling and craftsmanlike cabinet work enhance any home.

Portable Sets...



Take your favorite programs with you—

Easy to carry, adaptable to either a.c. or d.c., the individual small set can be taken to the country, beach house, hotel on long trips, or used in any room in the house. Ideal for keeping a sick person cheerful.

Wide choice of interesting broadcasts—

The all-wave sets each provide, not alone better reception of the regular broadcast bands, but *variety*, in short wave, police calls, airplane weather reports, amateur broadcasts—all the extras that bring variety when the regular programs are not just what is wanted at the moment. *(This is what the all-wave means to the public—variety, novelty, human interest.)*

Phonograph Combinations...

Master of your own program—

If you like a piece and want to hear it three or four times, this is your instrument. And who hasn't a list of favorites? Often it isn't convenient to listen to a program—your own plans interfere. With the combination you can have your own choice of music at any time to suit your *own convenience*. You can even hear voices since stilled in death. And no advertising to distract from fullest enjoyment. Recorded selections also are better because no record is turned out without painstaking rehearsal. The best of several recordings of a selection is chosen for final processing.

Complete freedom from atmospheric static

In warm summer climates radio reception, despite all the manufacturers can do to trap it out, is seriously handicapped by atmospheric static. But a recording is never bothered by it. People are surprised to hear such clear, undisturbed music from a set during summer. Recordings played on a combination possess the full range of tone that radio has because of electrical transcription.

Automobile Radios...

Your ball games wherever you are—

It is football season, and you can hear the broadcasts from your car, whether you are driving out in the country, shopping with the wife around town, on a business trip, or anywhere else.

Your favorite programs even on the road—

No need to stay home now to hear Major Bowes' amateurs Sunday afternoon. You can still enjoy your drive in the country and hear your program, too. At a picnic you bring your music with you.

Good company on a lonesome ride—

The tedium of a long trip alone is banished by an auto radio. So, too, the hurry to get there because of the desire for human companionship which we all experience. Surprising how appropriate music is when you see an inspiring view. Brings you the time, the news you did not have time to read before starting that morning.

Toys, Movies, Games...

Play that educates youngsters—

Electric toys, such as trains, building sets, experimental sets and the like teach electrical fundamentals along with the play, an ideal way to teach. Boys use their excess energy along constructive lines and learn to enjoy building rather than destroying. An occupied child seldom gets into trouble.

A record of happy events and affairs—

Home movies catch and preserve happy occasions as nothing in the world else can. Children grow up, picnics, trips, events fade into memory, but the home movie revives that memory and recreates the pleasurable occasion.

+ + Comfort

and Freedom from Bother to Get It

Air Conditioning...

Weather just as you like or need it—

Independence from the weather because it makes its own to your own prescription. Makes hot summers livable, cold dry winters more endurable. Promotes health because it filters air of dirt, germs, and pollens. Often relieves hay fever and asthma sufferers. Promotes greater personal efficiency.

Pays for itself in cleanliness—

In the long run the absence of dust, dirt, and the correct humidity and heat will preserve furnishings, reduce overall housework enough to more than justify installation.

(As with other appliances in this guide, manufacturers or utilities will supply you with full list of customer advantages. But be sure to interpret all mechanical or construction features in terms of these benefits.)

...Auxiliary Air Heaters

Quick heat whenever wanted—

Tucked away in a closet until wanted, the auxiliary heater is right on the job to throw out heat when, where and however wanted. Between seasons, for a cold morning or evening, or in the bathroom, breakfast room, sewing room, on the floor while baby plays. Helps dry hair, warm or dry clothes.

So much safer and cleaner—

Does not take anything from the air in order to create heat—all comes along the wire. Makes no soot, ashes, flame or fumes. This means a clean house, less bother, peace of mind.

Special extra values—

If it is fan type it can be used as a fan alone in summer to create a gentle circulation of air. If the spot type it directs the heat, and often is good for asthmatics, directed over them while they sleep. Or it can be used as a heat lamp for sore muscles or bones—the infra-red heat rays penetrate deeply.

...Major Air Heating

Tends itself—

Besides the virtues listed above for the auxiliary heater the use of electricity for major heating of the home has the big advantage of being able to completely control itself without any attention whatsoever. Thermostats and time clocks can be used to take over the entire job.

A clean house, clean air—

The nature of electric heat, its freedom from combustion (all the combustion is done for the customer far away at the power plant, and the fumes and smoke are there, too). Renders delivery of 100 per cent clean and 100 per cent efficient, undiluted heat.

Individualized control—

Electric heat is amenable to the most diverse personal tastes and requirements. Each heater can be operated separately or independently of the general house heating system. This is ideal in cases of illness or where there are aged or invalid members of a family.

...Fans, Attic Ventilators

Health bringers—

Health authorities agree that air kept in circulation is healthier than still air, even if it is not changed. Hence a fan is an all-year necessity, especially needed to circulate air in the closely shut-in winter household. It thus prevents headaches, illness.

Coolness and heat relief—

Prevents prostration in excessive heat. Induces sleep at night. Attic ventilators draw in cooler outside air and remove the hot layer of air caged in the attic, which keeps the house hot all night.

Unobtrusive, quiet—

New fans are nicer to look at, quieter in operation, in every way more inconspicuous. Operating cost is very low. They remove odors and smoke, which means a clean smelling house.

...Humidifyers, Other Devices

Winter fuel savings—

The humidifyer adds humidity to the dry winter air and hence reduces the need for excessive temperatures to maintain warmth. This means that a house heated to 65 degrees, with proper humidity, is as comfortable as one at 85 deg. without humidity, and far healthier.

Warm feet on cold days—

A warm plate or small heating device especially designed to keep feet warm is available. It is a god-send to a stenographer who must work in a cold, drafty office or loft building. It is enjoyed by many a housewife when she must sit still darning or sewing during winter days. Convalescents find it aids their recovery. A good heating pad will serve in the later case, too.

Housekeeping + +

A Little Motor Supplies the Elbow Grease

Vacuum Cleaners...

Longer life to rugs and to the housekeeper—

A home is a workshop, when it comes to keeping it up. Husband uses machines and tools in his office or workshop, and since 75 per cent of a woman's work at home is chasing dirt, a vacuum cleaner is her most needed machine. This means longer life to her. *(Explain how the cleansing action of your own make of cleaner removes the deep dirt, the sand, the moth eggs, that mean longer life to her rugs, drapes, furnishings.)*

Better health, cleaner, brighter home—

Women take pride in their homes. A cleaner makes this possible. Germ laden dust is captured in the bag, whereas in the old-fashioned sweeping it is spread around the room. Dusting is now done *before* vacuuming because the cleaner picks up all dust from floor or rugs.

Hand Cleaners...

Gets into the corners and crevices—

What the large cleaner does to rugs the little hand cleaner does for furniture, drapes, corner, mouldings, the automobile. It is light and easy to handle. Versatile, with a number of attachments for special jobs.

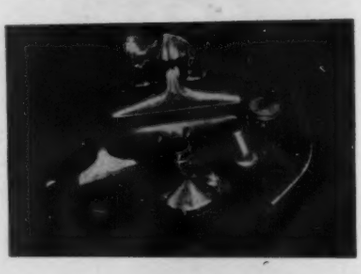
Blows out where it cannot suck out dust—

Inaccessible places, such as inside the piano, inside radiator coils, bedsprings, the inside of a radio, can have the dust blown out of them and picked up elsewhere. The blower also can be used to spray paint or moth destroying crystals.

Useful for stunts, ventilation, too—

Besides blowing feathers from one pillow case into another, many out-of-the-ordinary uses can be made of small cleaner. For any stunt requiring the blowing of paper, confetti, ribbons, it can be used. Also placed at a window it will serve as a ventilating fan to suck smoke or smells from a room, or blow in fresh air.

Cleaning Accessories...



Floor polishing without backbreak—

Either a floor polishing machine or the new polishing attachments to the regular cleaners take all the backache out of waxing and polishing a floor. The gentle, continous brushing brings a finish to the floor that no amount of heavy brushing could do.

Cleaner home, brighter and happier—

With a tool for every type of cleaning job (explain them) the home-maker will be less wearied, her home cleaner and brighter, her temper better, her family happier. She will have more time for other interests. With the spray outfit she can finish furniture to suit her own tastes.

(The three foregoing usually go together. It is wise to sell a complete cleaning service, including the large vacuum cleaner, the hand cleaner and the accessories. In doing so, plan a regular routine of demonstration. The manufacturer of your machines probably has one to suggest to you. The entire secret of success of the cleaner sales crews who operate in your town lies in a well rehearsed and complete demonstration plan.)

Sewing Machines...

Better fitting clothing at a saving—

Because she can make clothes to suit her own personality and tastes, can teach her children to sew and make clothes, too, can save time and effect economies in wearing apparel, alter and repair the family wardrobe. The electric sewing machine is easy to use, quick to do its work, and sews strong, even seams.

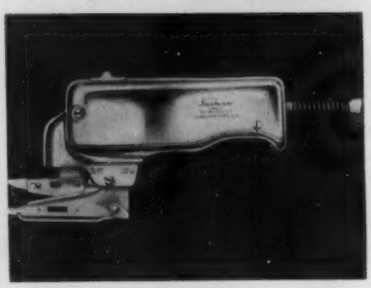
An attractive piece of furniture when not in use—

Nicely designed cabinets allow machine to be placed in any room, used as a stand or table when not sewing. Portable models can be tucked away in an inconspicuous place, easily carried about and quickly set up to use.

Wide variety of effects possible with attachments—

By following instructions or attending sewing schools mending, pleating, shirring and several types of finishing can be done with a little practice.

Other Aids to Housekeeping...



Electric scissors that save fingers—

Powered by a tiny motor which operates fast moving shears the electric scissors cut any thickness of material quickly and accurately without hand fatigue. Ideal for women who do much sewing, craft work, cutting of cloth, cardboard or paper.

Tea kettle that is always ready—

A little hot water in a hurry for any of a thousand household needs, is provided by the electric kettle—popular in England for all tea drinkers. Usable without a stove, anywhere, it helps in entertaining, nursing, odd jobs requiring a little hot water, shaving, heating a baby's bottle. Handy around an office, store, hotel, too.

+ + Keeping Healthy

Sell the *"Ounce of Prevention"*

(All sorts of "cures" employing electricity are brought forth. It is well to avoid promoting or selling these. Some may be beneficial enough, others have been known to do real harm, which would reflect upon your business and integrity if sold by you. There are certain aids to well being, however, that are accepted and even recommended by physicians. You can sell these with perfect assurance that your customers will derive their money's worth).

Sun Lamps...

Sunshine at your command

Exactly the same rays as produced by the sun, that keep folks healthy by helping to provide Vitamin D. (Do not try to sell sun lamps as cures for anything. Let the doctors prescribe such cures. Sell them as auxiliary sunshine, available on tap, regardless of outside weather, and at their own convenience. Read the literature of the manufacturers thoroughly so as to talk intelligently. But sell "sunshine," no more, no less.)

Build resistance to disease—preparedness

In winter folks get only 4 per cent as much sun as in summer; if indoors a good deal less. Sunlight builds bodily reserve, sounder teeth, stronger bones in children. Electric sunshine has been proved as effective as natural sunlight; in many instances where sunshine is scarce, superior, because reliable, available at the flip of a switch.

...Heat Lamps

How good it feels deep inside

Because the heat generated by electric heat lamps—infra-red—penetrates into the underlying tissues, heat lamps relieve pains due to rheumatism, neuritis, sprains. They are not cures, but they do relieve pain in a harmless, non-habit-forming way. The way they work is to stimulate the blood circulation, and help the body to throw off the difficulty by supplying energy which normally the body would deplete itself to provide. It works something like refueling.

Useful in other ways

In reality a small concentrated heater, the heat lamp can be used as a small heater for drying hair, directing heat for any other purpose. Where the air over a patient must be kept warm, as in pneumonia, asthma, or similar afflictions, a heat lamp can be so placed and directed as to keep the air warm and dry despite cold weather. Thus high-room temperatures are not necessary and the air can be kept fresher.

...Heating Pads

Warm feet on cold nights

A cozy bed companion on cold nights that will warm feet or back. Its automatic heat controls keep it at the right temperature.

Relief from pain

Neuralgia, earache, toothache backache, cramps, pneumonia, chest colds, all are relieved by the application of heat. The heating pad is a means of applying heat close to the body, under the covers or right against the skin, for its flexibility allows it to conform to the body.

A quick way to get warm

When chilled, a heating pad at the back for a few minutes is the quickest way to get warm. Old people or anyone with sluggish circulation or anemia finds it a great boon.

...Vibrators, Hair Dryers

A lovely complexion

Of the numerous health appliances devised, the vibrator is one of the first and soundest. By gentle massage it stimulates circulation of blood which aids nature to correct many defects. The scalp can be kept healthy and clean, promoting healthy growth of hair. The skin can be massaged to keep up the muscle tone in a healthy glow; result, a clear, clean complexion. Sore muscles can be massaged and made to feel much better. Fatty tissues can be broken down where they appear as lumps or bulges so as to reduce where reducing is needed. Newer models are lighter, better looking, easier to use.

Soft, clean, glistening hair

Shampooing the hair is a chore, and a risk sometimes where there is no sure means of drying the hair and scalp thoroughly afterward. An electric hair dryer, with a heating element incorporated in it, provides a warm, safe breeze at your own direction to dry the hair perfectly. Where one can water wave her own hair, the dryer will save her money at hairdressers. In summer it can be used without the heater to blow cool air.

Attributes of a modern, up-to-date woman

As accessories to her dressing table, both the vibrator and hair dryer, finished in light colors and attractively designed, will distinguish the possessor of these appliances as modern, alert to new ideas, and painstaking in her toilet. Her toilet completed much quicker, she will be independent of the sun or other haphazard means of drying her hair.

...Other Health Appliances

Reducing without starving

Dieting, doctors often warn, is a dangerous way to reduce, since it often reduces resistance to disease. Appliances which help to reduce fatty tissue by a form of massage do so without giving that pinched face, starved look. A new device pictured here, is a roller, heated slightly, used to roll off fat from places from which it is desired to remove it, without drugs, starving, or dangerous methods.

Sharp razor blades every shave

Electric razor blade sharpeners preserve tempers, promote good dispositions by assuring the man about the house of smooth, sharp-bladed shaving every time. Reduces the cost of shaving, too, for blades last many times longer. It hones and strops, and even improves the edge on brand-new blades.

Shave without water or soap

Users of the electric or dry shaver are enthusiastic about this new and so much simpler method of shaving. They say that the saving in shaving soaps, creams, and blades soon pays for the razor. Shaving, instead of a daily ordeal, can be done so easily that it is done oftener, which means better appearance. Women find it a safe depilatory for removing hair from arms and limbs.

+ + Sell an Electric

"For the Family Washing—

Your customer wants—

These are the basic needs which prompt a woman to invest in home laundry equipment. Build your sales appeal on these, backed up by the specific features and appliances that follow:

1. **Plenty of clean clothes for her family**—when and as needed. Especially important if she has a growing family.
2. **A smaller investment in clothes**—washed oftener.
3. **Particular care taken** on the nice things she owns.
4. **Saving in money** over the cost of outside service and on clothes.
5. **Relief from the backbreak** and drudgery of trying to do the washing by hand.
6. **Pride in owning** modern, up-to-date equipment.
7. **Assurance that the equipment will be trouble-free.**

...Wringer Washer

Quickly done and out of the way

Wringer types of washers are fast in action and fast in handling of clothes between rinses.

Safe water extraction

New washers have wringers which are absolutely protected against accident. The rolls are large and the squeezing action in extracting the water is gentle and even. Buttons stay on and hands or hair cannot get caught in them.

Use little space

New designs in washers are compact and require the minimum of floor space. When not in use the flat cover usually provides a top for placing something temporarily.

Lower first cost

Because of simpler mechanism and larger quantity production.

(Every make has a number of special features. Translate these into customer advantages. Learn and USE a routine for demonstrating.)

...Dryer Washer

More thorough drying

Clothes can be kept spinning in the basket until practically ready to iron, if need be. This is a big help in rainy seasons.

Greater safety

The method of extracting water cannot be started until the hands are out of the way.

Pillows and blankets washed successfully

The spinning allows bulkier objects to be washed and water extracted. This enlarges the usefulness of the machine and saves on cleaning bills.

Water empties itself

Pump equipped models eliminate the need to lift pails or bother with special plumbing for emptying the washer when done.

(Each make has some special features. Study these and interpret them in terms of what they mean to the customer.

...Tray Washer

Space saved

Where there are laundry trays the tray washer presents a number of space saving and unique features. It occupies only the top of one of the trays already there.

Simplifies handling of water

Turn the faucet to fill it; pull the plug to drain it. Thus it requires no pump, and does not have to be maneuvered into position to wash, rinse or drain. Heat is retained in the trays, which saves on the fuel used in heating the water.

Saves time

A few seconds saved on all the foregoing features speeds washday. Because it is so convenient to use (merely turning in the water and starting the motor), washing may be done more frequently and with less quantity at a time. For the woman with a baby this means a great deal.

Easily moved in case of changed residence

Small and compact and weighing very little, the tray washer is easily moved. Since most recently built homes and apartments are equipped with wash trays, it is adaptable almost anywhere. In case of community laundry rooms in an apartment, it is easily carried from the apartment and back on wash days.

...Small Washer

Apartment dwellers' life saver

In the tiny apartments so prevalent today the mistress of the apartment is doomed to launder by hand those things she will not send to the laundry. The small washer that fits under the sink or in a small closet is the answer to her problem. Especially if there is a baby in the family. The little washer is sturdily built and does the same thorough job of washing that its larger sisters do.

Does dry cleaning too

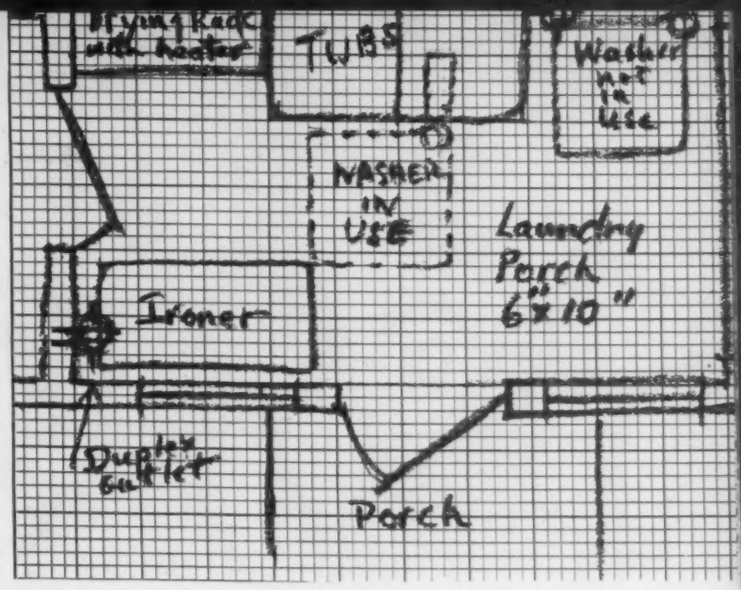
Unless a non-inflammable cleansing solution is used, such as carbon tetrachloride, it is dangerous to attempt dry cleaning with or without any kind of washing machine. But with such solutions the little washer can do an excellent job of cleaning.

An auxiliary washer

Just as some families have two cars, some families will want two washers, one for the major washing, another for a quick washing of a few articles.

Home Laundry + +

—*There's No Place Like Home*"



The complete laundry furnishes these

Purchases may have to be made an item at a time, but the dealer who desires repeat business from the same customers (which reduces his sales cost and increases his profits) will start all sales with the picture of an ultimate complete electric home laundry. In a new house it may be planned with the idea of building the equipment into the house, as shown in the picture on the left page, top. That represents the ideal type of home laundry. But even a modest back porch can become a home laundry room ultimately if planned that way.

Use sketches to visualize the plan

Even if it is only a rough pencil sketch like that at the right, it will help your prospect to visualize something to work for and look forward to. It also demonstrates a genuine and permanent interest on your part in her laundry problem. This will keep her inclined to purchase the second appliance from you instead of shopping around. If you keep this in your prospect file it will refresh your memory as to what you originally proposed and help you to follow up for the second or third appliance before the first is completely paid for. (Under F. H. A. financing you may be able to sell the whole laundry as a unit.)

Ironer...

Can sit down while ironing

About 60 per cent of the labor of washing goes into ironing, and this is usually done on tired, aching feet. The relaxation, the ease of doing ironing while seated comfortably is the strongest reason for owning. This eliminates back aches, tired tempers, promotes happier home life. An effort of moving an iron is taken up by a small motor, controlled by a finger or knee touch.

Quicker and better work

Neater clothes, a more professional finish is possible with the ironer. Time is saved, too, since larger surfaces are ironed at one operation. The constant, even pressure obtains more uniform results.

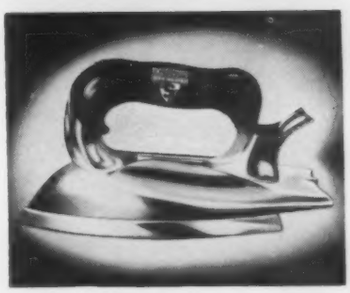
Suits and heavy articles well pressed

Ironing and pressing tasks that would be impossible with an ordinary iron can be done by the ironer, such as pressing suits, overcoats, heavy drapes, couch covers, etc.

An auxiliary table when not in use

Many models are made to present a table top useful between washdays, which conceals the mechanism, and gives the article a week 'round usefulness.

Electric Iron...



No more scorching

To the old standby, the electric iron, have been given features that make it a much more useful appliance. Its automatic temperature control can be set for any type of material, any range of heat, and it will maintain this heat indefinitely. No need to pull the cord out or run the risk of scorching or underheating.

Less effort with less weight

New lightweight models are easier to push around over the week's washing. They are designed to accomplish more by controlled heat than by main brute strength.

Indispensible

Whether a woman has an ironer or not a hand iron is needed constantly if she does her own dressmaking, just to press out a seam, or tidy up a piece of material before fitting or fine finishing.

Good looking

New streamlining gives swank to the old standby, makes it an attractive piece of home equipment, also improves the handling. (Mention any other features in terms of what they do or mean to the purchaser.)

Clothes Dryer...

Independence of the weather

Rainy days, extra humid weather, lack of sunshine, high winds that whip clothes to tatters, mean nothing to the woman who has an electric drying cabinet. She gets perfect drying every time. Can even control the amount of drying so as to keep things to be ironed just right.

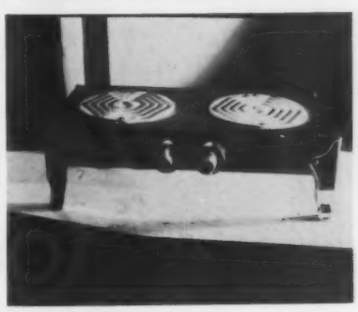
Saves time and effort

Placed in the laundry room there is no need for extra steps, climbing of stairs or attention-diverting watching of the clothes line. Ownership is a mark of modernity and up-to-dateness. With a baby in the family it provides real peace of mind and plenty of dry clothing.

Sterilizes the clothing

From a health standpoint there need be no fear that lack of sunshine will result in unhealthful clothes. The dry heat, the penetrating infra-red rays, sterilize and purify with much more certainty than doubtful weather, cloudy days. There will be no mildew formed on clothes dried this electric way. Sick bed clothing will be more effectively sterilized by this means.

Hot Plates, Other Equipment...



Safe boiling

An electric hotplate is the ideal means of heating a wash boiler. It is clean, makes no soot or smoke, is safer in case water boils over, and it scarcely needs any attention. It is useful in dozens of other ways as an auxiliary stove.

Hot water always ready

An electric water heater is indispensable to peace of mind and abundant water for wash day. (See page 20 for water heater sales data.)

Warmth for the laundry room

An auxiliary air heater is a handy washday companion. On cold days it keeps the room cozy. It can be used to hasten drying of some special articles wanted quickly.

Light to see when things are clean

It is almost useless to wash in a dark laundry room. One cannot tell when the clothes are really clean, detect spots or stains that need special treatment. A good kitchen lighting unit makes seeing easier, results surer.

+ + An Electric

at the Cost of

What it offers any family—

A room to be proud of, that adds a romantic touch to food service of the home. A center for entertainment and hospitality.

Arranged to save half the time in preparing food and in keeping the kitchen spic and span.

Better food, prepared in a more sanitary way with better tools and equipment.

A more healthful, cheerier, safer place to work.

Safeguards food, health, dishes and glassware, dispositions, and the energies of the home-maker.

More economical to operate and to keep up.

Eliminates need for servants and the attention, concern, and expensive arrangements they demand.

...Range

Appetizing, nourishing food—

Food electrically cooked looks better because it is not shrunken or dry; tastes better because nourishing juices are preserved.
(Tell why insulated ovens, temperature control, waterless cooking make this possible.)

Clean, and attractive kitchen—

Clean pots and pans, walls and ceilings, because of flameless, non-combustion fuel. Good looking range because of modern styling. Up-to-date method which should bring pride in being modern.

Assured cooking results every time—

No variation in heat or control, no guesswork. Temperature and speed of cooking under control. Freedom from attention and care. Can even go out and leave it to turn itself on and off—safely. Even children can be instructed how to prepare meals in case of illness and get perfect results.
(Your manufacturer and utility have complete data on the tested selling points of electric ranges, including coolness, economy, durability, time and labor saving, rates, and special features of each range. Study these, turn them into customer blessings, and sell on these virtues instead of price. It pays.)

...Refrigerator

Protects the health of the family—

Conserves foods and protects them by keeping foods at 50 deg. or less. Promotes peace of mind.

Pays for itself in savings—

Food spoilage stops, left-overs keep, and quantity buying at food specials, knowing they will keep, makes savings. Usually earns better rate which makes operation of other appliances cheaper.

Such a convenient, useful helper—

No trouble at all, just plug in and it goes. Moved whenever wanted. Makes desserts and dainties. Helps in entertaining and hostesship. Provides ice in abundance and the facilities for wider use than most people will ever make of it.

Clean, and good looking—

Dresses up any kitchen. Easily cared for. New finishes and features of construction designed for ease of maintenance.
(Back up all these points with your refrigerator's features. These are the customer views of the appliance. Show how your make provides these and more.)

...Dishwasher

Eliminates housekeeping's most hated task
Most monotonous job, most demoralizing of all, is done better by machine.

More sanitary—

Dishes are washed in temperatures which hands cannot stand, neither can germs. No more smelly, greasy dishrags. Often pays for itself in the doctor bills it saves. Tests prove its sanitary effect.

Saves your dishes—

Most dishes are broken or chipped in dashwashing. The saving in dishes alone is estimated at $6 a year. It treats gently your prized dinnerware.

Keeps dirty dishes out of sight until washed

Dishes are stacked in the racks until ready for washing. An entire day's supply can be washed at once. The dishwasher also rinses and dries the dishes.

Even husbands cheer—

For they no longer feel they ought to help with this task they hate no less than their wife or children.

...Mixing Machine

Strong hands for the heavy tasks—

A little motor supplies the strength, and clever devices do the mixing, beating, mashing, churning, pealing, grating, shredding, sharpening, buffing and polishing that tire the fingers and arms. And they do it smoother and better.

Saves time in preparing dinner—

By speeding up food preparation it lessens the amount of time required. Some things it will do without attention.

Assure a repetition of success—

By smoother mixing, and adherence to the recipes, the same successful cakes or other goodies can be made every time.

More sanitary too—

Just as modern factories prepare foodstuffs without touching them with human hands, these devices eliminate almost all handling in food preparation. Shredding and grinding, paring and peeling, all of which risk fingers and hands, are done safely.

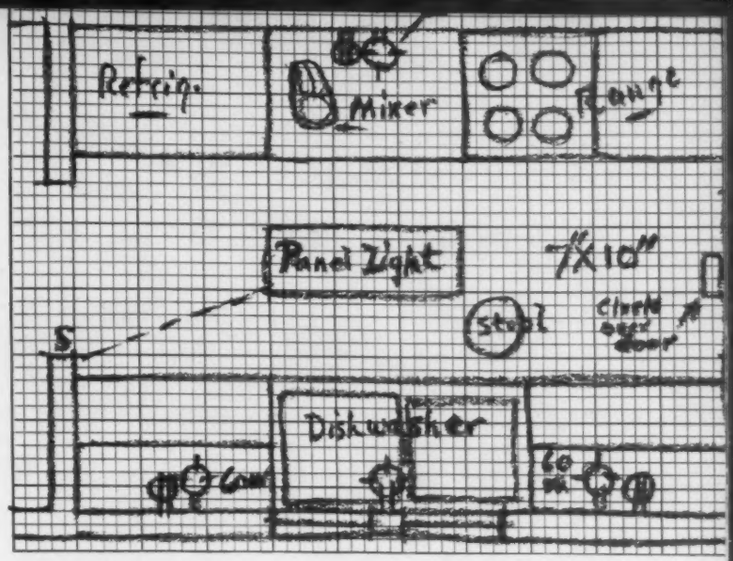
Kitchen + +

a New Car

(Back up each of these boons to the home with the reasons why, based on the features of your particular makes of appliances, plus the prestige and reputation of your manufacturers and your own establishment, and then show how the complete package job is available now under F. H. A. financing.)

Sell by sketch or drawing—

A sketch or drawing, even if it is but a rough one such as that shown here, helps the prospect to visualize what can be done to transform her kitchen into an electric one. It also sets up a definite plan of appliance buying, and demonstrates your continuing interest in her needs. It serves as a reminder to you to follow up the sale of one appliance with the next, and keeps you in a preferred position for the next sale; discourages shopping around.



Ventilating Fan...

Sweet smelling kitchen—and house—

By removing the cooking odors, steam, and changing the air, the house is kept free from that well known "middle class smell" so common to old houses of the gay nineties.

Ventilation without insects—

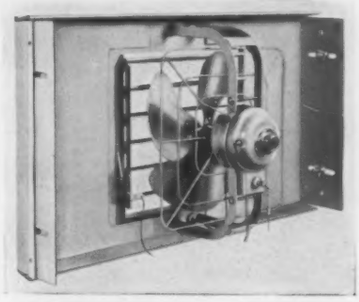
Fresh air can be drawn in by forcing the stale air out. This new air comes in without opening windows wide to allow flies or insects to enter.

Cleaner curtains and walls—

Grease-laden fumes are drawn straight out without allowing opportunity to deposit on drapes or walls.

Easily installed—

Made to fit and adjust to any window, these fans are a package item like any other appliance and require no special installation unless wanted mounted in a wall.



Water Heater...

Health depends on cleanliness—

And to be clean requires plenty of warm water. It cleanses the skin better, preserves complexions. Hot water is needed for clean clothes, clean dishes, clean bodies.

A clean and safe means of heating—

Electric water heaters are safest and cleanest. There is no flame or fumes, no pilot flame. It can be hidden away in a closet safely, placed anywhere that will be unobtrusive or more efficient in relation to piping.

Abundant water at the right temperature—

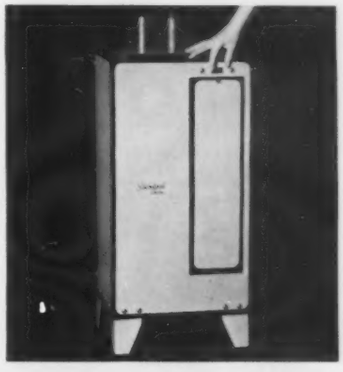
Automatic thermostats maintain the temperature accurately, watch when the energy needs to be turned on again, shuts it off when hot enough. There is nothing to adjust or fuss with. You can install and forget it.

Saves time and bother—

No need to wait for the tank to heat up, or to stoke up a stove. No need to heat the house in warm weather. All the heat stays in the tank.

Brings real economy in electric service—

Earns the best rate the utility offers and brings down cost of operating other appliances.
(Your utility has full data on water heater advantages. Use these.)



Clock...

Correct time always—

Mealtimes are important. Broadcasts of home economics talks or recipes are always on time. The housekeeper needs an accurate timepiece. Electric clocks, kept regulated by the utility, are indispensable to every kitchen.

Recipes require timing—

With the electric clock and its easily read figures, timing of operations, such as mixing, baking, or boiling eggs, is made simple and accurate.

Getting the children off to school—

Morning breakfast is a flurry to get husband to work and children to school on time. There is no argument over the accuracy of the electric clock.

Adds to the appearance—

Beautiful models, with new designs, bring decoration and charm to the kitchen, laundry or any room in which a clock is used

Other Kitchen Accessories...

Make professional ice cream—

With the new motor driven ice cream freezer that fits into the electric refrigerator unit, smooth, professional ice cream is had every time. The motor agitates and smooths the consistency, shuts itself off when the cream is frozen.

Music while working—

A small radio in the kitchen is not only company, but it cheers up housekeeping with music, brings favorite programs into the kitchen while busy at household tasks, comes in with home making hints and helpful advice from experts where recipes can be taken down, or tried as directed over the air.
(See the pages on the table appliances for other kitchen devices. See the page on "seeing" for the importance of good lighting. See the page on "convenience" for the wiring of sufficient outlets to make electricity convenient.)

Convenience + +

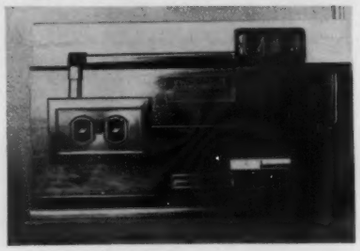
Depends on Facilities to Use

Your market, as a dealer, is only as deep as your customers' ability to use the appliances you sell. This, too often, is definitely limited, stopped, by the old, outgrown wiring system in their homes. **Wiring is not something to be sold over the counter.** Yet the situation is not hopeless. This is proved by the types of additional wiring which are available to your customers and which you can advise them to have installed. Get in touch with a progressive electrical contractor and **work with him** to see that your customer gets more convenience. It will mean more appliance sales to you.

...Cords

See that the cords on the appliances you stock bear this label. It is the guarantee of good quality; less trouble will return to you from that appliance. Cords of sturdy, long life come with these bracelets every 5 ft.

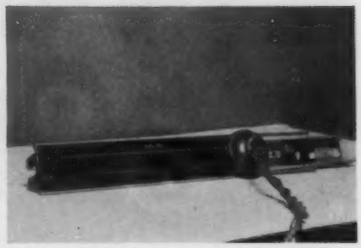
...Fuseless



Never left in darkness

A fuse is a safety valve. It never blows except when some dangerous condition heats it to the melting point. Thus it saves lives and homes. But it is inconvenient when a fuse blows and leaves the house dark, especially if no spare fuses are available. With the new Nofuz circuit breakers instead of fuses, the circuit is broken until the condition which caused the break is removed—perhaps a worn, broken cord, or too many appliances on at once—and then a flip of the switch and service is restored. Several manufacturers make these now, some small enough to take the place of the usual lighting tumbler switch, providing protection at the same time. A contractor can install these, either at the fuse center or a more convenient location.

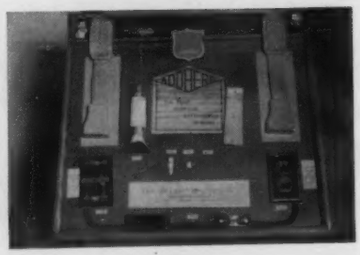
...Metal Molding



Safe, neat, inconspicuous

Trailing cords are eliminated when new outlets are installed in the metal clad, therefore sturdy, neat, almost invisible metal moulding. It can be installed by an expert contractor without dirt, fuss, muss or disturbance, quickly and inexpensively. Fits into corners, around obstructions, has neat receptacles and can be finished to match the interior trim, even papered over safely. Even new circuits can be run in this strong material.

...Plug-in Strip



The ultimate in convenience

Newest development in convenience, first displayed at the Chicago Century of Progress and now installed by wideawake electrical contractors, is the plug-in strip. It is a continuous strip that is installed in the base board. Every six inches there are two slots into which appliances or lamps can be tapped. You can find them in the dark. Furniture and lamps can be moved to suit the taste without regard to where the outlets are placed. Good looking, can be painted to match the room trim. Excellent for a kitchen or breakfast room, installed at the height convenient for use of table appliances.

...Add-Here

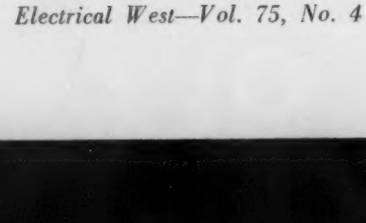
Blends into the wall

Another new development just announced and to be installed only by electrical contractors, is an all rubber wiring raceway, flexible in the extreme in adapting itself to any sort of building, finished in white, ivory, jade, and brown, or lacquered to match any other finish. It is cemented to the wall or baseboard, and hence installed without fuss or mess. Outlets can be located at any height, the location best suited to individual needs. Outlets may be changed by the electrician when rooms are rearranged or redecorated. Walls are not cut or woodwork marred. The expense is very nominal.

Pendants that serve lamps

An attractive pendant outlet, ideal for bed lamps, boudoir lamps, appliances, radios, is available with this system. Pendants are decorated in a fabric covering in six two-tone colors, are adjustable as to length, provide three electrical connections.

...Outdoor Outlets



For garden entertaining

Summertime in the West is out-of-doors time, when much of the living is done in the garden living room, patio, or yard. Electrical appliances make ideal aids to eating a cool evening meal out of doors; entertaining company there. Outlets should be located at convenient places for just such use. Some conceal themselves, as that in the picture, in a "rock", or large "Toadstool". Others are regular outlets somewhere available. A good contractor can install these safely and permanently.

Christmas outdoor lighted tree

Cheer and color at the holiday season is provided by the lighted outdoor Christmas tree. Outlets for these are also useful for garden parties in summer, maybe even to run an electric lawn mower or hedge clipper.

+ + Seeing

Brings Better Enjoyment of Life

I. E. S. Lamps...

Guaranteed eye comfort

Designed for students by the eminent Illuminating Engineering Society, the table study lamp improves anybody's seeing—for reading, sewing, or other close eye work. There are 54 points that it must meet to obtain the I. E. S. label. That's why it guarantees comfortable seeing. Hithertofore, to obtain this perfect quality of light it was necessary to make elaborate installations. Now the student table lamps can be wrapped up and taken home.

Sightmeters measure the amount you need

The impartial little scientific sight meter responds sensitively to every shadow. It tells just how much light there is. Your own eyes determine how much they like, the sightmeter registers how much that is. This is like writing your own prescription. (Dealers who use the sightmeter demonstrations are most successful. Your lamp manufacturer will provide you with them.)

...Floor Lamps

How they brighten up a room

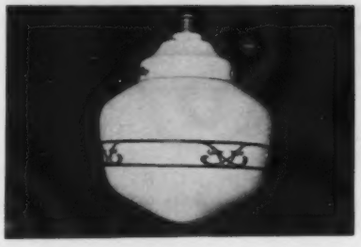
Really pleasing, soft, yet ample light comes from these new I. E. S. indirect or reflector type floor lamps. Yet, just because they give excellent illumination the designers have managed, for a change, to make them really good to look at, too. Their simple, correctly proportioned lines make them appropriate to any decorative scheme, whether modern or old-fashioned.

How bright all the colors look

You never have had an opportunity to appreciate the rich colors in your own rugs, drapes, furnishings, even your clothes, until one of these lamps was brought into the home. It does not distort or wash over any color; rather it brings it out for all it is worth.

Such a handy and useful light

The wall type, or pin-it-up I. E. S. lamp, gives the same fine illumination as floor or table lamps, but has the added advantage that it can be hung anywhere, on any wall. What a really fine bed reading lamp it makes—correct light of fine intensity and softness, with enough about the room to make lifting the eyes from the book no strain at all.



...Kitchen Lights

Can see what you are doing

Makes all the difference in the world while getting dinner ready, washing dishes, putting up fruit, or just mopping the kitchen or bathroom floor, to be able to see when you get things right, or clean, or miss something. Used to be that it was a lot of bother to install a new, up-to-date kitchen lighting unit. Now all you do is screw it into the socket.

Can see if Junior is clean behind the ears

Makes fine bathroom light, too. Throws out a nice even light that makes shaving easier for father, exposes the dirt junior missed in his ears or on his knees, makes selection of medicines sure and safe.

Dresses up the room

Can be had in trim that harmonizes with your own bathroom or kitchen.

...Pin-it-up Lamps

A clever new note

Handy little lights, well designed and good to look at, make it easy to add a novel touch to any room. They come in a wide variety of types and kinds.

No trouble to hang up, or move

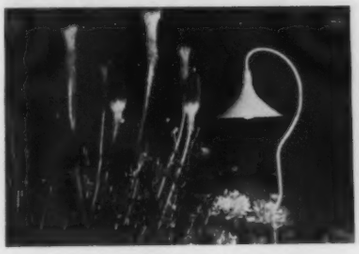
Very light in weight, and simply attached to a push pin in any wall, they are quickly placed; just as quickly moved to bring a change to the room with very little trouble.

Brighten up corners

Makes a charming effect over a couch or writing table. Brings out all the subtle colors and shades in plants. Some are made to hang a small house plant under them. The light makes the plant more healthy, too.

A most welcome gift

No matter how complete their home equipment, people can always use another lamp, especially a clever, decorative thing like this.



...Garden Light

Garden works longer hours

When a man devotes time and energy to a garden, it is a shame not to be able to enjoy it a little more. If he works all day he has no opportunity to see much of his flowers. A garden lighting unit brings forth the beauty of the garden even after sundown. In fact, because it "spot-lights" the garden, and you see little else, there is nothing to distract attention from the flowers themselves. They look far lovelier.

Adds a new parlor to the house

The garden, in summer especially, becomes another living room, often the loveliest of all. Various types of unit are available—from simple, inexpensive, portable or easily installed, light weight flood lights to especially designed lamps that blend in with the foliage and the plants and becomes an inconspicuous part of the setting.

Decoration + +

Electrical Ideas That Bring Charm

Usually utilitarian in its functions, electricity can be used for sheer decoration and dressing up. On this page are a few staple suggestions, electrical appliances, lamps or ornaments that decorate and enhance the appearance of a home.

...Lamps

Character and cheer are given a room, or a home by the choice and use of ornamental lamps. These may be selected without regard to their light distribution if there is already plenty of the correct scientific light described under "Seeing". Decorative lamps are used to heighten color, create bright emphasis in certain areas, or bring out the beauty of something nearby, such as a plant, an art object.

...Light Ornaments

Numerous ornaments embodying a tiny light to make them glow warmly are available. As with a lamp these are chiefly for heightening a decorative scheme. A recent addition to such ornamentation is the use of luminescent paints and small ultra-violet lamps. Popular priced kits of this kind are offered. Shrines are made to glow in unearthly hues by their use. Many little light ornaments serve as night lights, casting a soft glow sufficient for such a purpose.

...Chimes

Not alone attractive in appearance to enhance a hallway or entrance, but mellow sound to substitute for the harsh jangle of the doorbell is provided by the electric chimes. Some even have different controls that allow their use for dinner call, telephone, etc.

...Christmas

Strings of electrical fireflies should soon begin making their appearance to gladden the holiday season. Both for the shrubs and trees outside, and the Christmas tree inside, these tiny lights bring cheer and color to the holidays. They are available in new sets which do not all go out if one lamp fails. Also in set wreaths, crosses, other designs. The strings often do double duty during other seasons for party decorations, birthdays, Hallowe'en, garden parties.

...Flower Lamps

Because light promotes the growth of house plants, lamps which are both a lamp and flower stand are doubly decorative. Flowers or plants never look so green and bright as under such a lamp.

...Clocks

Utilitarian, yes, but decorative too, are the new electric clocks, available in a wide variety of designs and models, with and without chimes, alarms, lighted dials. They give absolutely correct time in the bargain.

Cooperation + +

Makes Team Work Pay

Wherever you do business in the West there is a co-operative agency either of your utility or of distributors and dealers, to whose activities it will be profitable for you to tie your own selling. These agencies carry the heavy load of advertising and promotion, build up customer desire for electrical wares, increase the volume of any dealer who takes advantage of them. Team work is what makes the gains these days. Join the team and bring home the bacon.

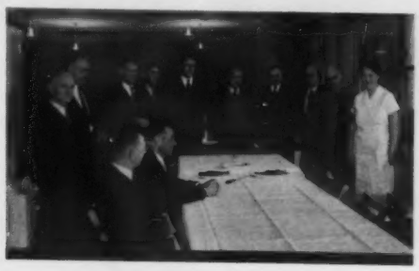
In the Southwest—

In Phoenix, Ariz., the Central Arizona Light & Power Co. carries on cooperative campaigns to which dealers can tie with profit. In San Diego County the record-making Bureau of Radio and Electrical Appliances (whose snappy ads are shown at the bottom of the page) is doing a whale of a job building customers for dealers in that vicinity. In Los Angeles the Electric Cookery Council and Bureau of Power and Light conduct cooking sales schools for dealer salesmen; help them make sales. (At right is one such school.) Southern California Edison, too, is running a series of dealer sales schools, conducting cooperative advertising and selling drives.

Poster, above, is one short, pungent Edison ad message that steered much stove replacement business to electrics.

In Denver—

Between the Electrical League of Colorado, the Rocky Mountain Electrical Assn., and the Public Service Co. of Colo., the electric appliance market is kept in one continuous state of ferment and activity. Sales records, accordingly, are being broken, dealer profits and volume increased. By staging spectacular public events, such as the Wonders Show (above), Christmas campaigns, garden and outdoor decoration drives, the public is kept electrically minded.



Los Angeles salesmen learn cooking.

In Reno, Nev.—

The electrical contractors and dealers association and Sierra Pacific Power Co. do more business for everybody concerned. **In the San Joaquin Valley,** the Dealer Cooperation Program of Valley Electrical Supply Co. and San Joaquin Power has a long record of business building for cooperating dealers.

question
HOW MUCH WILL IT COST ME TO USE THESE NEW APPLIANCES WITH 1/2 OFF FOR EXTRA ELECTRICITY
ANSWER
LET ELECTRICITY DO THE WORK IT WILL SERVE YOU
CONTINUALLY + ECONOMICALLY
means this—
50%

(Above, an animated means of explaining economy used by Peffer Music Co., Stockton, designed by George Graffis, of P. G. and E.)

In Northern California—

The Electric Appliance Society of Northern California does a most exceptional job for dealers and distributors. Not only in large cooperative campaigns but between these, through its educational directors, it assists individual dealers to stage their own shows, cooking schools, plan store displays, etc.

WOULD YOU-
LIFT AN ELEPHANT?
PUSH AN ELEPHANT?
PULL AN ELEPHANT?
CARRY AN ELEPHANT?
Bureau of Radio and Electric Appliances of San Diego County

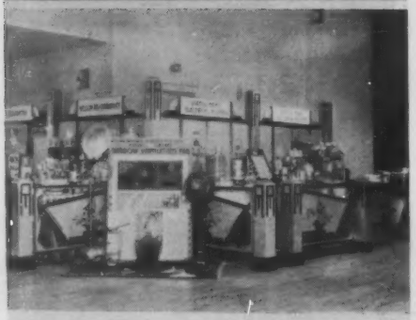
Expositions—

Electrical shows, staged by dealers themselves, or by a co-operative league, or even newspapers, are a big stimulator of public interest in modern living appliances and services. San Jose dealers have staged several such as that shown at left.

Well organized campaigns are half the battle, and such experienced associations as the Rocky Mountain Electrical Assn. plan activities far in advance, then keep them constantly in mind by diagraming them as shown below.

In Portland—

Each of the utilities serving in Oregon has a dealer cooperative program that the dealers who are wise and who take advantage of it find gets them business. **The California Oregon Power Co.** and **Mountain States Power Co.,** with scattered properties all over the Northwest, nevertheless does a concentrated sales job with its dealers.



A Portland department store stages an electrical exposition.

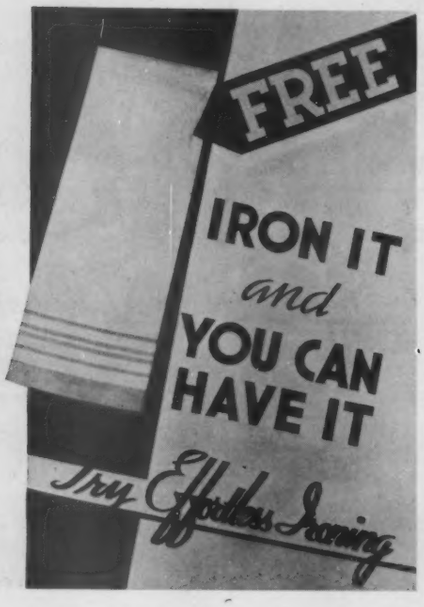
Posters, such as that shown right, display helps, advertising, window contests that stimulate effort to dress up the store and attract customers, sales classes, ideas, programs worked out—all these come from the coordinated working of dealers, distributors and utilities.

In Utah—

The dealer coordination department of Utah Power & Light Co. is the helping hand in stirring up business for Utah dealers.

In Washington—

In Spokane, it is the dealer cooperation department of the Washington Water Power Co. that undertakes the heavy work of organizing selling campaigns for dealers. In Seattle and western Washington, the Puget Sound Power & Light Co. has developed a fine dealer cooperation department which is making sales for all.



Lamp Sale
Here are values from
$5 to $15
Now $3.00 to $7.00
Davis Furniture Co.
How is the Lighting In Your Home?
Like Seeing With
Smoked Glasses
Do You Know That Light Cream Walls Reflect the Light Best?
BOISE PAYETTE
LUMBER COMPANY
Follow These Simple Lighting Rules.
ELECTRICAL EQUIPMENT SALES ASSOCIATION

In Idaho—

The Electrical Equipment Sales Association is the active body of dealers and Idaho Power Co. that keeps the public buying electrical appliances, lighting and equipment. Like many co-operative bodies it gathers sales reports impartially, summarizes them, and issues these to dealers to see "how they're doin' ".

(Electrical West each month prints a table of all such reports. It is well worth studying.) Above is one the association's ads to which local dealers have tied in.

Financing + +

Convenient terms will frequently swing a sale when all other efforts fail. Be prepared to utilize some one of the many financing services that are available.

FHA—This government agency insures loans for appliance purchases through local banks. Obtain details from your own banker, your local utility or the FHA district offices.

Utilities—Some utilities, notably the Southern California Edison Co., have financing arrangements for refrigerators, ranges and water heaters. Secure information from local offices.

Manufacturers—Many of the electrical manufacturers, such as General Electric, Westinghouse, and General Motors, have their own financing companies. If you handle their appliances you are familiar with their facilities.

Finance Companies—Practically all of the commercial finance companies handle appliance time paper. Some of these, such as C.I.T. and C.C.C. offer three-year terms on major appliances at rates comparable with any others that are available.

A. C. McMICKEN
General Sales Manager
Portland General Electric Company, Portland, Oregon

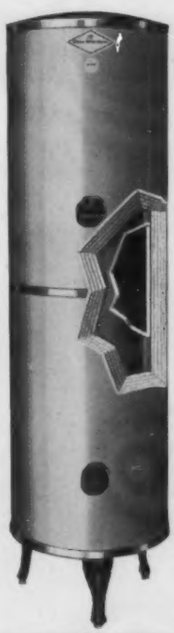
"Seb, . . Your fine low-priced tank is certainly helping us build load."

"That's great, Mac!.. Other electric companies are reporting increasing water heater sales too."

MILLARD SEBERN
Vice President
Fowler Mfg. Co., Portland, Oregon

More Water Heating Installations

when you push FOWLER TANKS



Fully lined with vitrous porcelain enamel—clean and rust proof as glass.

Heavy composition insulation—over 90 per cent efficient.

"Clamp on" units apply low intensity heat over wide areas.

Built to endure—to eliminate service calls—to give your customers finest service at lowest cost.

● If you want to sell electric water heating—and of course you do—here's an offer:

We will send on request prices, specifications, and sales presentation of facts which have won thousands of converts to the Fowler tank. Study them over at your convenience and decide if you want to do a real electric water heating load building job. If you do, we will cooperate with your appliance sales department to create a program that fits your cases and is the result of much valuable experience.

This OFFER IS FREE. Just write and say "let's have it."

FOWLER MANUFACTURING CO.
Southeast 8th Ave. and Salmon, Portland, Ore.
(Since 1915)

FOWLER *Electric* TANK
"LONG LIFE—LOW COST"

DEALERS!
WHOLESALERS!
SAVE MONEY
and obtain
PROMPT SERVICE
ON
Replacement Parts
ALWAYS CARRIED IN STOCK
for all Makes, Any Models of

● WASHERS

● VACUUM CLEANERS

● WRINGER ROLLS

FACTORY PARTS DISTRIBUTORS
FOR 33 MANUFACTURERS

★

AUTHORIZED
FACTORY PARTS FOR

ABC	Easy	Laundryette
Apex	Eden	Meadows
Automatic	Faultless	Roto-Verso
Barton	Grinnell	Savage
Block	Johnson	Universal
Conlon		Zenith

SMALL APPLIANCE PARTS
Proctor & Schwartz
Knapp-Monarch
Appliances

REFRIGERATOR PARTS

★

Our Washing Machine Repair Parts Catalogue No. 20 is the most complete and comprehensive ever published. Diagrams of models, photographs of all parts, numbered and indexed for easy ordering.

Cleaner Parts Catalogue No. 10 covers all makes of cleaners.

Write for detailed information.

ELECTRICAL
APPLIANCE SERVICE
CORPORATION
Wm. Vogel, Pres.
918 South Flower Street Los Angeles, California
Successors to
WASHING MACHINE SERVICE SUPPLY CO.

DYNAMIC Hotpoint CAMPAIGN FOR

1935 has been a real Santa Claus to those active in electric range merchandising. Public interest in electric cookery has swung into line and people the nation over have shown a lively desire for this modern method of cookery.

Hotpoint's national advertising every month in leading women's magazines reaches nearly eleven million families—about every other family in the country. Electric cookery articles appear regularly in 1300 newspapers from coast to coast. Hotpoint's educational program carries electric cookery information to 3,400 high schools, 700 colleges, and 1600 government home demonstration agents.

All of this activity has fanned to high heat public interest in electric ranges and has cultivated a real market for you. Now Hotpoint offers a program for the biggest holiday season in electric range selling.

CALROD

Hotpoint's hi-speed, long life electric heating coil is a big factor in electric cookery's present swing to popular favor. Calrod puts an end to service cost and worries. It has been said by electrical authorities that Calrod is the most important element in the permanent success of the electric range business.

THE DAWN

Hotpoint's latest model is an achievement in styling by Helen Hughes Dulany, foremost woman industrial stylist. The Dawn is a full size range with large automatic oven, super-speed broiler Calrod units, Thrift Cooker and "Chef's Brain." Available in French gray or gleaming white porcelain with chromium trim.

ELECTRIC Hotpoint RANGES

WATER HEATERS

Thanksgiving and Christmas . .

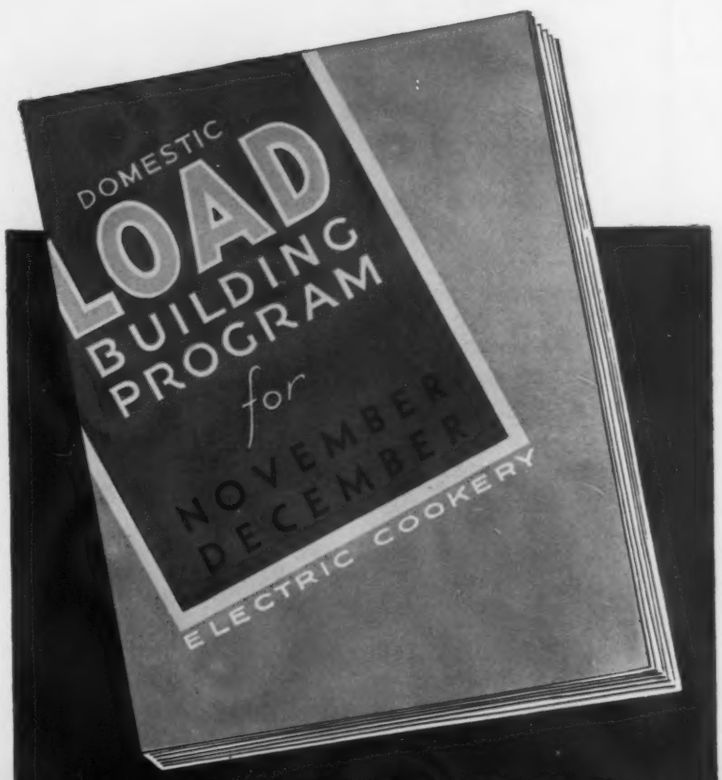
WINDS UP GREATEST YEAR IN ELECTRIC *Range History*

Economists predict that 1935 will see the biggest Christmas holiday trade in years. It's a "natural" for electric range selling. And, as everyone knows, the "holidays" start with Thanksgiving. See the powerful double-barrel campaign Hotpoint offers for holiday selling—*"Santa Claus is Coming to Town."*

THANKSGIVING • Hotpoint's Thanksgiving campaign is complete with special newspaper advertising, direct mail, window display, and sales program—all specially adaptable to your local activity. Be sure to see the Hotpoint plan book which describes the program in detail. Get set for the biggest holiday season in years.

CHRISTMAS • No use letting a rolling ball stop. Hotpoint has carried the "year 'round program" of range merchandising to a marching conclusion. The Christmas campaign is designed to keep range sales moving and is alive with new direct mail pieces, newspaper advertisements, posters, window display and special material. Take advantage of the big Christmas ahead. Send the coupon for the Hotpoint Thanksgiving and Christmas plan book today.

EDISON GENERAL ELECTRIC APPLIANCE CO., Inc.
5612 West Taylor Street, Chicago, Illinois



Send for Hotpoint's Big Book of Thanksgiving and Christmas Plans. Mail Coupon Below Today—

Two Complete New Campaigns THANKSGIVING *and* CHRISTMAS

EDISON GENERAL ELECTRIC APPLIANCE CO., Inc.
5612 W. Taylor St., Chicago, Illinois

Please send Hotpoint Plan Book of Thanksgiving and Christmas Campaign material.

Name _____

Firm _____

Sales Talks that SOLD Appliances

BILL SMITH, MASTER SALESMAN, HAS planned his fall selling campaign to take full advantage of better business conditions. Growing customer purchasing power means that his prospects will be spending more for home comfort and entertainment—that the old radio will no longer "get by". Hence he has planned to push his new line of radio receivers, building his floor and window displays and his sales talks on the new value in entertainment, comfort, and convenience that the modern radio provides. He has used the manufacturers' display material to good advantage in building an attention-getting display that stops the casual shopper long enough for Bill to start selling. A man has paused before one of his console models and Bill goes to work.

CASE HISTORY NO. 10

Selling A RADIO

BILL: "Good afternoon, sir. Have you had the opportunity of trying out the splendid reception that these new sets provide?" *(He snaps the radio on).*

PROSPECT: "No, I haven't. I suppose there have been some improvements in the past few years since I got my set but there are mighty few radios, even the newer ones, that have a better tone than mine. I get good distance on it, too."

¶ This might be termed a "stock answer for the radio salesman and Bill recognizes it for what it is—a challenge to prove he's got a better set. However, he avoids the argumentative reply and tries persuasion instead.

BILL: "I agree with you that some of the older receivers do a fine job, especially the more expensive ones, as I presume yours is. However, radios are a lot like automobiles. The manufacturers build them to meet the conditions they know exist at the time they are designed. For instance, cars a few years back were built with large road clearance because there were few paved roads. Today cars are lower and faster because hard surfaced roads are the rule rather than the exception. It is much the same in a radio. Five years ago broadcasting stations were designed to transmit intelligible sound—short wave transmission was still in its infancy—it was thought that outside interference was something over which no control could be exercised. Today it is different. Broadcasting stations have spent millions in the past few years in order to reproduce the voice and music as nearly perfect as possible (high fidelity). Short wave has been adopted for both increased distance and for certain commercial transmissions which provide dramatic entertainment for the listener. Unless your receiver is designed to reproduce the signal with the same degree of perfect tone with which it is now transmitted to you, you are missing much of the enjoyment that the modern radio provides. Short wave reception also opens up a new and entertaining field for your pleasure. Distant reception also is clear even in the day time and without fading because of the automatic tone control provided on the new sets. Just listen to the tone qualities of this fine musical instrument. *(Bill tunes it to a popular dance band.)* Notice how it is possible to distinguish practically every instrument. It doesn't sound like a reproduction at all, does it?"

¶ Bill uses care in translating technical language into terms the prospect is sure to understand. Many sales are spoiled because the salesman uses trade jargon which goes over the customer's head.

PROSPECT: "It certainly has a fine tone but still I don't know that it's so much better than my own set. Does this new set have short wave reception too?"

BILL: "It gives you three distinct bands of short wave reception by merely turning this dial. The first setting receives police and distant stations broadcasting on the short wave. The second position gives you weather reports and certain experimental stations and the third position brings in the amateur radio operators. Just think, with this one dial you have worldwide reception at your fingertips. Here on this scale you can receive broadcasts direct from foreign stations. It will bring practically every worth-while program in the world right into your living room. Try tuning in on a few!"

¶ Bill employs a fundamental selling point here—letting the prospect operate the set himself. Note the effect it has.

PROSPECT: "That's certainly interesting. You know this is the first time I ever played around with short wave reception. I'll bet there are a lot of things to be listened to on these short wave dials."

BILL: "There certainly are. Planes thousands of feet in the air; an exciting police chase; a rescue at sea; all dramatic events that are happening as you listen. Another thing, I don't know whether you're interested in sports but take the football broadcasts, for instance. Your favorite team may be playing away from home. If the game isn't broadcast from your local station, nine times out of ten you'll be able to pick it up either on the regular dial or on the short wave broadcast from the distant station. You know that many of the larger stations broadcast their programs on both frequencies nowadays."

PROSPECT: "It would be pretty nice to have all of these things but I'm afraid I'll have to make my old set do awhile longer. I haven't much to spend on luxuries like a new radio, particularly since my old set works pretty well."

BILL: *(smiling)* "I appreciate how you feel about it, but considering that the whole family will get added pleasure and enjoyment from a set like this it would seem a pretty sound investment and it doesn't require much of an outlay to bring a set like this into your home either. May I make a suggestion?"

PROSPECT: "I guess so but I don't see how I can get a set at this time."

BILL: "I know you like your present set and it undoubtedly gives splendid service within the limits of its design. You can't appreciate, however, just how much finer reception the newer models give until you have compared them on a fair basis. Let me send this set out to your home for a couple of evenings. Try it out yourself. Let the family have the fun of exploring the short wave bands. Listen to some really fine music. See if it doesn't add much enjoyment to your favorite program. I'll wager that the family will outvote you if you say that you can't afford this really fine instrument."

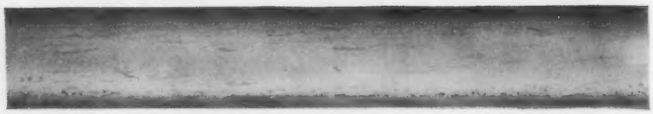
PROSPECT: "Well, that's a fair enough offer. I would like to try it out."

BILL: *(taking the prospect's name and address)* "Of course, you could turn your old set in on this new model but I can't conscientiously advise it because so many families have found that two radios in the home are an added convenience. Often the children want to listen to their program just at the time you want to hear some sporting event or a symphony. As you say, your present set is giving you fine service and could continue to supply good reception for programs where the high fidelity and clear distant reception possible with this new model are not needed. You would be surprised to know just how much both sets are used in homes where two receivers are available. I'll come out in two or three days and find out how much you really enjoy having two radio sets in your home. You can have this new model for only a few dollars a month and I'm sure that the added pleasure it will provide will convince you that it is the best investment of home entertainment that you ever made!"

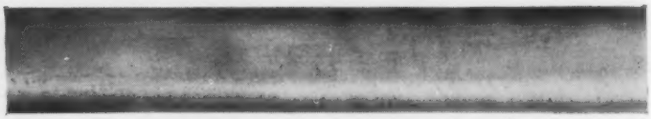
¶ In selling a man, Bill has stressed performance and pleasure for the family rather than appearance. He has tried to build up in the prospect's mind the conviction that better tone, greater distance, all wave reception and better all-around performance are worth much more than the money necessary to buy them.

CALIFORNIA OREGON POWER CO. | PORTLAND GENERAL ELECTRIC CO.
MOUNTAIN STATES POWER CO. | PUGET SOUND POWER & LIGHT CO.
PACIFIC POWER & LIGHT CO. | IDAHO POWER COMPANY
NORTHWESTERN ELECTRIC CO. | WASHINGTON WATER POWER CO.
★ UTAH POWER & LIGHT COMPANY ★

Make MODERN SERVICE WIRING *Your Ally* ...in Selling



Type SE (Style A) Service Entrance Cable.



Type SE (Style U) Service Drop and Entrance Cable.

Romex Non-Metallic Sheathed Cable.

Better appearance and more economical service installations are sound arguments which materially contribute in advancing the sale of a wider application of electric current for use in the home. The sale of current-consuming devices usually involves a changeover in the service to accommodate the increased load.

•

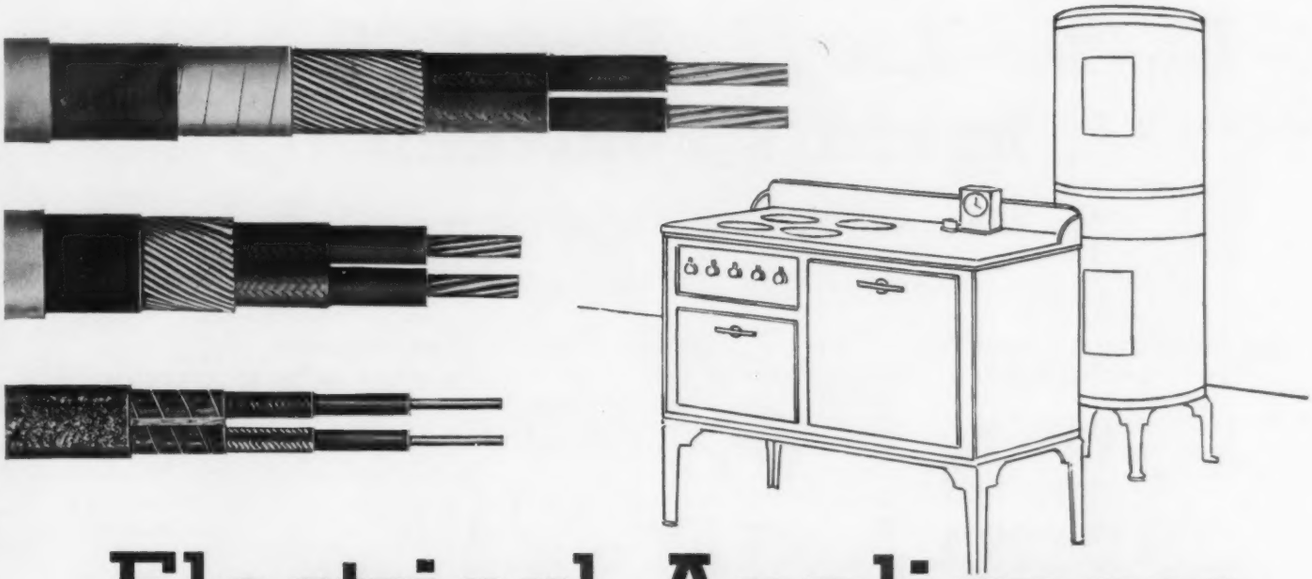
1 General Cable Drop and Service Entrance Cable of one of the modern concentric neutral types is quick and easy to install, small in diameter, and inconspicuous on any type of building.

The installation costs of electric range services reflect substantial savings by the use of General Cable Drop and Service Entrance Cables, and the economies thus made materially assist in the sale of current-consuming devices.

Write for a copy of General Cable Bulletin SE-2.

2 The 1935 Code provides for the use of Service Entrance Cable direct from the service equipment to the range.

3 Romex Non-Metallic Sheathed Cable for interior wiring ideally meets all house-wiring problems. Light in weight with a smooth surface, and easy stripping, all make it easy to handle and attractive as a modern wiring method.



Electrical Appliances

4 General Cable Safecote Building Wires and Cables represent the last word in electrical conductors to be installed in conduit. They are flame resistant, minimum diameters. The electrical contractor appreciates the ease with which he is able to make an electrical installation using General Cable Safecote Building Wires and Cables.

5 General Cable Mid-Rip Cord—the all rubber parallel portable cord designed for use on table lamps, bridge lamps, floor lamps and small appliances—made in four popular colors to match surrounding furnishings—mahogany, ivory, green and black.

6 General Cable Heater Cord Sets are designed and built to give the maximum service. Long life cord and a non-breakable attachment plug makes the housewife realize a sense of security when she uses it. Packed in an attractive carton. Every Cord Set labeled with the Good Housekeeping Institute Certificate of Approval.

All of these products are approved by the Underwriters' Laboratories, and bear labels attesting that fact

GENERAL CABLE
is a first line source of supply in
FARM ELECTRIFICATION

DISTRIBUTORS OF COPPERWELD WIRES AND CABLES, COMPOSITE COPPER AND COPPERWELD WIRES AND CABLES, PHONO ELECTRIC BRONZES, AND COMPOSITE COPPER AND BRONZE CONDUCTORS.

GENERAL CABLE CORPORATION

30 OTIS STREET, SAN FRANCISCO • 3600 OLYMPIC BLVD., LOS ANGELES • 1901 SMITH TOWER, SEATTLE

BETTER LIGHT—BETTER SIGHT STRIDES FORWARD

New plans and material for 1935-36 promise big activity in coming months

NEW GENERAL ELECTRIC LIGHT METER INTRODUCED

● A NEW Light Meter, so small that it can conveniently be carried in a vest pocket, in the change pocket of a coat, or even in a lady's purse, has just been introduced by the Incandescent Lamp Department of General Electric Co.

The new meter closely resembles a small, thin desk clock. It is 2¼ inches square, and 1⅛ inches thick. On the face of the meter is a rectangular shaped scale, with a range from 0 to 75 foot-candles. The scale is also marked to show foot-candle ranges for different seeing tasks, such as reading large print, office work, drafting, sewing on dark goods, etc. On the back of the meter, a stenciled metal plate shows recommended minimum foot-candle values for different types of work. The new Light Meters will sell for $11.50 each.

LIGHTING EDUCATION THRU POPULAR MAGAZINES

The Better Light-Better Sight story is being told more widely than ever through the editorial columns of leading magazines. For example, read the articles on this vital subject appearing in the October issues of BETTER HOMES & GARDENS, the November issues of NATIONAL PARENT-TEACHER, MC CALL'S, PARENTS', PHYSICAL CULTURE, and RED BOOK, and in the December issue of WOMAN'S WORLD.

In fact, in both magazines and newspapers today, you are very apt to see a reference to Better Light-Better Sight or an entire article on the subject. Such lighting education is of invaluable help to utilities.

644,175 I. E. S. TAGS ISSUED AND ON ORDER UP TO SEPT. 12

Last year, up through the end of December, 317,725 I. E. S. tags were issued. This year the number of tags issued and on order up to September 12 is 326,450 . . . a total of 644,175. These tags again indicate the amazing sales appeal of the new I. E. S. Better Sight lamps and the increasing interest of customers in the Better Light-Better Sight program. Remember that each I. E. S. Better Sight Lamp installed is an added load builder for the utility.

This Fall, backed by a nation-wide magazine and advertising campaign put on by 40 I. E. S. Better Sight Lamp manufacturers, sales of these lamps should reach new highs. General Electric is actively supporting this campaign, is devoting a large amount of magazine space to these lamps, and has also made available a complete assortment of newspaper advertisements and other advertising and merchandising material to help sell I. E. S. Better Sight Lamps.

REQUESTS FOR "NEW STORY OF LIGHT" POUR INTO NELA PARK FROM SCHOOLS

The school work project on lighting and seeing for children in primary grades, advertised in a leading school publication, has proved so popular that reprints are now being made. More than 2,500 requests have been received in a month's time and they are still pouring in. Hundreds of teachers have written enthusiastic letters after receiving the project, and utilities are using it successfully in presenting the Better Light-Better Sight story to schools.

If you haven't capitalized on this powerful educational material in your territory, write for complete information at once. It promises to be one of the most far-reaching promotional pieces yet designed.

669 ORDERS RECEIVED FOR G-E TRAINING COURSES IN ONE MONTH

In a month's time, orders received at Nela Park for all three G-E training courses . . . for Supervisors, Advisors, and Retail Sales people . . . totaled 669. They have come from all parts of the country.

Comments from utilities and large retailing organizations have characterized these training courses as the least expensive, the most effective, and the most complete home lighting sales training ever offered.

THOUSANDS GET BETTER LIGHT-BETTER SIGHT STORY AT NELA PARK

In the first eight months of this year, more than 23,000 men and women went through the General Electric Institute at Nela Park and learned more about better lighting for better seeing. Many of these visitors represented utilities.

Between June 6 and September 7, more than 1200 utility men, distributors and General Electric division men attended two-day camps at Nela Park to learn more about the Better Light-Better Sight activity and its application.

* * *

For up-to-the-minute information on any of the plans, materials, or activities mentioned here or on any other phase of the Better Light-Better Sight program, write to General Electric Company, Dept. 166, Nela Park, Cleveland, Ohio.

General Electric manufactures lamps for home lighting and decoration, automobiles, flashlights, photography, stores, offices and factories, street lighting and signs. Also Sunlight lamps.

GENERAL ELECTRIC

THE WAY TO better LIGHTING

..... and a PROFITABLE lighting business

SMOOT HOLMAN COMPANY
SIGHT-CRAFT
INGLEWOOD CALIFORNIA
MADE IN U.S.A.

Sight-Craft
VENUS
LUMINAIRE

With four thoughts in mind—EFFICIENCY—DURABILITY—ATTRACTIVENESS and LOW SELLING COST—Sight-Craft engineers have designed commercial and industrial lighting units that are attuned to the trend toward higher intensities as the modern requirement for better vision. Because of the ready acceptance of these Sight-Craft features thousands of units have been sold and are proving their merit. All-in-all, the way to a profitable lighting business is the SIGHT - CRAFT way.

Sight-Craft
APOLLO
LUMINAIRE

The "VENUS" is of the luminous bowl type made entirely of METAL and finished in VITROLUX—two features that insure long life, easy cleaning and practically eliminate breakage. Its unique 3-piece construction is worked out in a manner which provides the luminous exterior without sacrificing efficiency or light distribution and greatly adds to its all-over attractiveness, lighted or unlighted. The price is low for such an outstanding lighting unit. Available with chain or stem hanger.

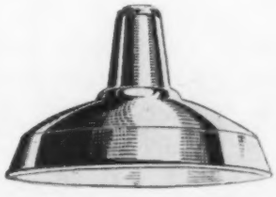
The "APOLLO" provides an economical means of lighting that is free from shadows and glare. It has VITROLUX white interiors, for greatest efficiency, and ivory exteriors to harmonize with room decorations. Reflectors and hoods are of the finest enameling iron. Thousands of these units have been sold because of their durability, efficiency, attractiveness and low price. Available with chain or stem hanger.

SMOOT - HOLMAN COMPANY

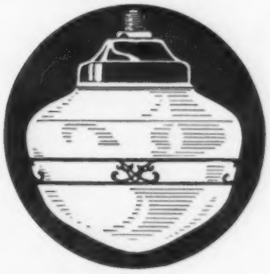
SAN FRANCISCO

INGLEWOOD, CALIFORNIA
Seattle—J. Edwin Roberts, 532 First Ave. So.

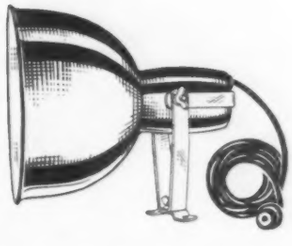
NEW YORK



Sight-Craft INDUSTRIAL units are of everlasting VITROLUX finish—durable—low in cost and especially constructed to withstand severe atmospheric conditions. Thousands of these scientifically correct reflector units are proving their worth in many industries.... They invite comparison in price, quality and service.



The colorful Sight-Craft KITCHEN unit screws into existing lamp sockets thereby reducing sales resistance and making demonstrations easy. The metal holder is of superior porcelain enamel—white or colors and the globe is white or decorated to match the holder. Its low cost makes it easily saleable.



Here is a UTILITY REFLECTOR for gardens, industrial yards, garages . . . and answers to many calls for a good reflector for general floodlighting. It has a tripled fired porcelain finish, sturdy construction throughout and its low cost includes a 4-ft. all-rubber cord and sturdy plug.

LOAD *GUARANTEED FOR YEARS TO COME!*

. . . when you sell Water Heaters with Tanks of MONEL METAL

AS appliance sales-managers know, electric water heaters stand second only to ranges as dependable *load builders.*

Recognizing this, utilities feature heaters, and in many instances offer special rates for both continuous and off-peak service.

In your enthusiasm for boosting kw-hr output, assure a *continuance* of the load from this profitable source. Install heaters that will always give satisfaction . . . heaters that defy the challenge of rust.

Rust begins its destructive attack on iron the very hour that the water is turned on. And it keeps up its corroding action until the iron tank has rusted through. This is certain to take place within a few years. Perhaps *within a few months.*

Each time an iron tank rusts out, not only is one of your current-consuming customers subjected to the damage of a flooded cellar, but you yourself are faced with the loss of one more source of load. For experience proves that news of tank failure causes householders to listen to the sales arguments of competitors.

To make sure that your water-heater load will continue year after year, install heaters with tanks of Monel Metal.

Monel Metal tanks are so completely immune to the ravages of rust that we guarantee them . . . in writing . . . for 20 years.

Today, you may handle a choice of such well-known makes as HOTPOINT, WESIX and WESTINGHOUSE. All are available with Monel Metal tanks.

These tanks will outlive, by many years, the longest-term instalment agreements you ever make.

Write for data relative to the use of Monel Metal in household electrical appliances.

THE INTERNATIONAL NICKEL COMPANY, INC.

67 WALL STREET NEW YORK, N. Y.

• • •

MONEL METAL

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE SURE FIRE WAY TO SELL MORE WASHERS AND IRONERS *this Fall*

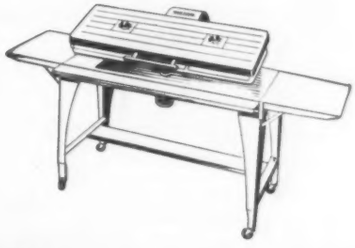
with * "BUY SPOTS"

**These are the "buying features" of the G-E WASHER*

1. G-E ACTIVATOR—Gentle but positive washing action.
2. ONE-CONTROL WRINGER—One control does everything.
3. PERMANENT LUBRICATION—No oiling necessary.
4. LONG LIFE MECHANISM — Adjustable to maintain high operating efficiency.
5. QUIET WASHING OPERATION—Saves your nerves.
6. QUIET G-E MOTOR—Guaranteed against bearing failure due to lack of lubrication.
7. QUICK-ACTING PUMP—Empties tub in approximately 2 minutes.
8. FLAT TUB COVER—A handy storage shelf.
9. LARGE CAPACITY—Seven pounds of clothes—16 gallons of water.
10. PORCELAIN ENAMEL FINISH—Practically chip-proof — Easy to clean — Durable.
11. RUBBER MOUNTED TUB—Live rubber cushion absorbs vibration.
12. STRONG LEGS—Spot-welded to skirt for added strength.
13. RUBBER - COMPOSITION CASTERS—Washer may be moved with ease.
14. WATERPROOF CORD AND PLUG—8½ feet long—all-rubber for long service.
15. SIMPLE OPERATION—Controls conveniently placed.
16. FULLY GUARANTEED for one year against defective materials and workmanship. Backed by a name that means QUALITY.

There is a "BUY SPOT" representing each General Electric buying point for G-E Washers and G-E Ironers . . . available for salesmen's use in making demonstrations. As each new buying point is made . . . a "BUY SPOT" is affixed . . . forming a complete visual presentation of all the features as the demonstration progresses. They are easily affixed on the unit itself and after the sale has been made they can be removed . . . as good as new . . . ready for use again.

IT'S A SURE FIRE SALES PLAN!
Get the details . . .



GENERAL ELECTRIC SUPPLY CORPORATION

Offices and Branches Western Region

SAN FRANCISCO, OAKLAND, SACRAMENTO, LOS ANGELES, LONG BEACH, SAN DIEGO, PHOENIX, EL PASO, PORTLAND, SPOKANE, SALT LAKE, DENVER, BUTTE

PORTRAIT OF YOUR BEST CUSTOMER!

Sell him these

Make Santa Claus work for you. A large percentage of his Christmas gifts this year can be electrical gifts—providing *you* sell them to the gift-givers. Graybar can help you in your selling job by providing a varied line of attractive and up-to-date electrical appliances. Appliances from Graybar are dependable, *quality* appliances. They help make satisfied customers—and more sales in the future. They are backed by a reputation for quality that goes back 66 years to 1869.

NOTE TO ELECTRICAL DEALERS . . . CONTRACTORS . . . POWER AND LIGHT COMPANIES

Graybar offers dependable service on a complete line of quality electrical items—wiring materials, lighting and signaling equipment, power apparatus, line material, lamps — in addition to a complete line of outstanding electrical appliances.

Graybar

OFFICES IN 77 PRINCIPAL CITIES. EXECUTIVE OFFICES, GRAYBAR BLDG., NEW YORK

Popular

with DEALER, CONTRACTOR AND CONSUMER

Modern Square D Control Equipment ... Built for Today's and Tomorrow's Domestic Requirements

Unexcelled in popularity the Square D line of switches and panels meets every qualification for safe control in domestic electrical installations.

Appreciating the concentrated activity of utility sales organizations on domestic load building, both indoors and out, Square D has centered attention on the improvement of products capable of satisfactorily and conveniently handling domestic load, both for today's and tomorrow's electrical demands.

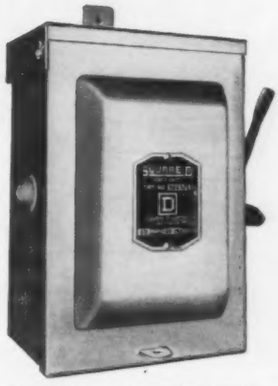
Illustrated at the right, for example, are four Square D products that surpass the tests of popularity and effective control with dealers, contractors and consumers alike.

The consumer appreciates the foresight of Square D design in anticipating his future electrical needs. His acceptance of Square D convenience and economy is assured.

The contractor is impressed with the ease and facility with which Square D panels and switches may be wired and installed.

To consumers, contractors and dealers, the name Square D is a guarantee of quality, long life and trouble-free operation.

CALL IN A SQUARE D MAN



OUTDOOR SAFETY SWITCH

Weatherproof type for every outdoor lighting service. No protective enclosure required. Removable hinged cover for easy wiring. Heavy duty galvanized steel box, aluminum painted.

RESIDENCE PANEL

The famous All-N-One cabinet. Provision for control of appliances.

PANELETTE

Flush and surface mounting type fuse cabinet. Provision in trim of panel for Despard or Bryant wiring devices. Space for bell and/or furnace transformer mounting.

TYPE D SAFETY SWITCH

A competitively priced service entrance safety switch. Rugged construction. Full range in capacities.

SQUARE D COMPANY

ELECTRICAL EQUIPMENT

INC.

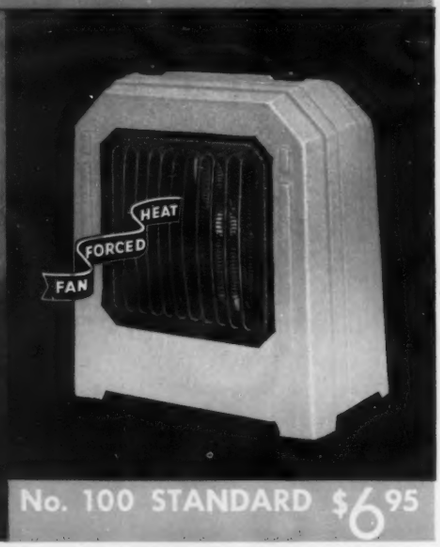
LOS ANGELES · SAN FRANCISCO · DENVER · HOUSTON

SQUARE D COMPANY · DETROIT · MILWAUKEE

THEY'RE THE FASTEST SELLING

Electric Heat Circulators

No. 200 DE LUXE $8.95



No. 100 STANDARD $6.95

● **Here's the *leader*—the right heater for *you* to stock—because it sells so fast—makes real profits for you—and delivers positive satisfaction to your customers.**

Arvin Fan-Forced Electric Heaters are just the thing for extra or temporary heat, wherever 110-volt A.C. is available. They're portable—handy for the whole family. They take the early-morning chill from the bathroom . . . keep baby warm during the bath . . . and make nursery, bedroom, and office healthfully comfortable.

Arvins are sturdy and attractive—are designed to look well in any room and to deliver warmth, without danger of burning baby's fingers, or marring furniture.

Order Arvin Fan-Forced Electric Heaters from your jobber right away. Set up the display (shown at left—*free to all dealers*) . . . plug it in, and snap the switch. When your customers feel the gentle, warm breeze, they're *sure* to buy. Arvins will bring you the same good profits they have brought other dealers from coast to coast for the past 4 years.

Approved by leading authorities—the Good Housekeeping Institute, and the Underwriter's Laboratory

Tested and Approved 1936 Good Housekeeping Institute

NOBLITT-SPARKS INDUSTRIES, INC...COLUMBUS, INDIANA

Also Makers of Arvin Hot Water and Steam Car Heaters and Arvin Car Radios

ARVIN FAN-FORCED ELECTRIC HEATERS

Now

Manufactured
on the
Pacific Coast..

Occidental

Electric Ranges

of
Outstanding
Quality
and Priced *for*
FAST SELLING

• • • • • •

MORE REVENUE TO YOU .

New Electric Ranges

Model 75A

NEW OCCIDENTAL ELECTRIC—75A. Just consider these great features: **1.** Has 400 More Cubic Inches Oven Cooking Space than ordinary 16-inch ovens. **2.** Full Porcelain Enamel Oven. **3.** Safety Non-tip Oven Racks and Removable Oven Rack Supports for easier cleaning. **4.** Two Oven Elements which distribute heat **evenly. 5.** Heavily Insulated Oven which holds heat uniformly and gives better baking. **6.** Accurate Liquid Type Oven Heat Control which signals when oven reaches desired temperature. **7.** Full Porecelain Enamel Smokeless Broiler. **8.** Four Large High-Speed Top Elements. **9.** Latest type of improved Silver Contact Switches. **10.** Porcelain Enamel Drip Tray under Surface Elements. **11.** Service Drawer mounted on Ball Bearings. **12.** Convenience Outlet. **13.** Timer Plug Receptacle which allows for instant attachment of Electric Oven Timer. **14.** Body of range mounted on Rigid Angle Iron sub-frame construction which maintains range in perfect alignment, prevents warping and insures oven door always fitting perfectly. **15.** Full Porcelain Enamel Finish in Ivory.

ONLY $104.50 retail F.O.B. San Francisco

The Secret of Fast Selling

Occidental dealers have the advantage of being able to give their customers a full Porcelain Enamel, Four Surface Element, Full-size electric range with every important feature and every detail built with care and precision. There is no skimping of material—these ranges are of outstanding **quality.**

Occidental electrics are made in four models with optional extra equipment—to meet every demand for cooking convenience at prices that offer more value for the money. That is the secret of fast selling—being in a position to deliver these quality ranges for less money **because they're manufactured on the Pacific Coast.** Then you get every range customer and every range profit.

Read These Most Important Merchandising Points:

1. You as an Occidental Electric Range dealer can offer a quality electric range complete, ready to install, precision built, possessing the highest performance and giving more value, more features for the money.
2. An electric range made by men who are experienced in knowing what pleases women—backed by the reputation of sixty-six (66) years of manufacturing experience.
3. Here at last is an advertising leader—a getter of floor traffic, a load builder, a profit maker.
4. Now you can turn the sales to your store—in fact "swamp" all competition.
5. The price—for the 75A—$104.50 retail, an exceptional range with features that will amaze your customers.
6. And these are genuine new ranges—timely for the Fall's fast buying season.
7. The $104.50 range will enable you to get prospects to whom you can sell the finer, higher priced, bigger profit Occidental Electric Ranges.
8. Made for Pacific Coast conditions.

MORE STORE TRAFFIC . . . *A Big Chance to* "SELL UP"

Designed with graceful lines and beautiful proportions by men who are experienced in knowing what women want in cooking equipment, Steiger & Kerr's 66 years manufacturing experience makes Occidental Electric Ranges their crowning achievement.

With more down-right quality offered for the money, the above Occidental electric brings you more contacts—more store traffic—with range buying prospects. Naturally, you will sell lots of these Occidentals at a profit, but more important, there are three finer and three more beautiful higher priced Occidental electrics that also offer your customers more features, more dollar for dollar value than other makes of ranges priced far higher. That will give you a chance to "sell up."

Occidental

ELECTRIC RANGES

...FASTER TURNOVER!!

Made on Pacific Coast

Performance That Will Surprise You

Yes, the Occidental gives performance that will surprise you—exceed your expectations. All corners of the oven are kept within a few degrees by the finer more sensitive Automatic Oven Heat Control. In fact, once you install an Occidental electric, test it, you will know that here is efficiency and precision built right into the smallest details. Naturally, your customers will be pleased and tell their friends.

Here you have the newest, most amazing values in electric ranges and the greatest, most timely opportunity ever offered to those who want to sell electric ranges faster.

Red-Hot Advertising Leader

A "red-hot" advertising leader to bring in customers—is the great $104.50 value pictured on the left. Put this range in your window. Use window banners outside and inside your store. Electric range sales will leap ahead. You'll sell for the least selling expense. Advertising pays for itself, makes money for you.

Easiest Selling for Dealers and Utilities

With all the great Occidental advantages — outstanding quality, more features, more value for the money—you'll be surprised at how much easier Occidental electrics sell. The easier the selling, the more revenue added to the lines, the more profits for dealers. And right now, while you are reading this announcement, the first shipments of these phenomenal new Occidental Electric Ranges are being sent to utilities and dealers. Also the free advertising material. So we say, get in touch with Occidental at once. Be ready for fast selling this Fall.

Model 80A

NEW OCCIDENTAL ELECTRIC—80A. Has all fundamentally important features, such as accurate Oven Heat Control, Extra-Large 16-inch Oven, and the other big features mentioned under the large electric range picture on the left. In addition, it has more graceful perfection of design and finer workmanship of its hidden qualities. Your customers will appreciate the additional space afforded by the three Service Drawers mounted on Ball Bearings. Full Porcelain Enamel Finish in Ivory, and Ivory with Green or Cameo Trim.

ONLY $129.50 retail F.O.B. San Francisco

Model 85A

NEW OCCIDENTAL ELECTRIC—85A. Your customers cannot buy a better electric range for their money than this De Luxe Occidental. In addition to the fine features mentioned under the range pictured on the left-hand page, it has these refinements—Master Grid Aluminum Smokeless Broiler. Three Utility Drawers mounted on Ball Bearings, Built-in Receptacles for Condiment Set **which is included,** and Counter-Balanced Lift Top Cover over Porcelain Enameled Cooking Top containing the Four High-Speed Surface Cooking Elements. Range comes in White, Ivory, Ivory with Green or Cameo Trim.

ONLY $159.50 retail F.O.B. San Francisco

Model 90A

NEW OCCIDENTAL ELECTRIC with BUILT-IN AIR CIRCULATING KITCHEN HEATER, SUPER DE LUXE —90A. Yes, here is the most outstanding Electric Range designed and built like a fine Swiss watch, plus every service part doubly strong to stand long, hard usage. The large Kitchen Heater with Heavy Grates will open up new prospects to you. You can sell to those who want an electric range with a Built-in Kitchen Heater. In addition, Model 90A has **everything** that other Occidental electrics have, such as Counter Balanced Lift Top which covers the Four Fast Surface Elements when not in use, etc. Range comes in Ivory, White, Ivory with Green or Cameo Trim.

ONLY $225.00 retail F.O.B. San Francisco

Occidental

ELECTRIC RANGES

Amazing New Occidental ELECTRIC RANGES!!

FREEDOM . . . LEISURE ECONOMY . . . SPEED

All Occidental Electric Ranges are equipped with an Automatic Oven Heat Control of the Liquid Type, famous for its accuracy, exacting quality and dependability. One sets it for the proper baking temperature and then forgets about the cooking until the baking time is up.

For a slightly higher cost, the Electric Timer may be had which turns the electricity on at any time selected; **on** say at 3 p. m. and **off** at 6 p. m. One can place the food in the oven in the morning and find it perfectly done when one returns at dinner time. The HEAVILY Insulated Oven keeps the meal hot until ready to be served.

All Occidental Electric Ranges are equipped with FOUR Full-Size, High Speed Surface Elements. **These** are superior for their long life, economy of electricity and FAST cooking.

OPTIONAL EQUIPMENT—Set No. 1—Lamp. Set No. 2—Lamp, set of four Condiments. Set No. 3—Set of four Condiments. Set No. 4—Electric Timer. **Elements:** Protected or Closed.

FREE Advertising for Fast Selling...

Now! SPEED in
ELECTRIC COOKING
NEVER BEFORE an Electric Range of this Outstanding Quality for . . $104.50
EASIEST TERMS . . . Full Trade-in Allowance
4 Col 14"

Powerful Newspaper Advertisements for You.

Four-Color Folder to help you sell.

Women Must Love Cook Ball
The Most Astounding Dollar-for-Dollar VALUES...
ELECTRIC RANGES of OUTSTANDING QUALITY at Popular Prices...
Occidental
ELECTRIC RANGES

Window Banner in Color

Reproduced above in miniature, are newspaper ads that will SELL, that will bring range buying prospects in to see you. Mats of the ads are available in two column, three column and four column sizes. We also have for your use, a beautiful full size 4-color folder and a colorful window banner in two sizes—15" long and 48" long.

STOP Electric Range Revenue Losses . . .
Increase Range Sales One-Third!

The Occidental Warm Air Circulating Kitchen Heater.

By selling these new heaters which burn solid fuels, your customers can have clean warmth and you will get more electric revenue on existing facilities because people can't cook on this heater!

Furthermore, facts prove that you can sell MORE electric ranges when you ALSO offer this heater. For the many people who do not have central heating systems in their homes must be supplied with a good heater to take the place of the fuel range removed, before buying an electric range.

They can't cook on it!

One utility executive says, "We have sold over 1,000 of them and have received nothing but enthusiastic reactions from customers. We estimate that it has made possible increasing our electric range business approximately **one-third** and has enabled us to obtain a full electric revenue."

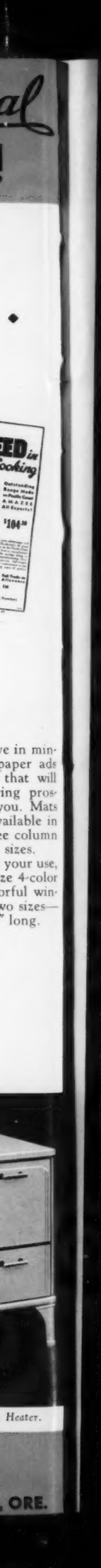
Investigate this companion to the electric range.

No. 60A—Occidental Warm Air Circulating Kitchen Heater.

Write at Once to our San Francisco Address for Catalog and Full Details

STEIGER & KERR STOVE AND FOUNDRY CO.

18th AND FOLSOM STS., SAN FRANCISCO, CAL. **Branches: LOS ANGELES, CAL., PORTLAND, ORE.**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ELECTRICAL WEST

[Devoted to the economic production, transmission and distribution of electric power and its application to industry, commerce and the home in the Pacific Empire, and to the sale and distribution of electrical utilization devices, equipment and appliances in that area]

October 1935

Humanizing Public Relations

By J. P. PASCHALL
Executive Department, Portland General Electric Co.

"LETTING George do it" may be all wrong, but if "George" can do the job better, then we say, "Let George do it." This is said after an experience at a recent National Housing Show in Portland where we let George do it—and what a job he did.

George, in this case, was an electric robot, constructed by the employees of the Portland General Electric Co. This old iron man, more than seven feet tall, standing on feet that weigh 56 pounds apiece, was shown in a booth along with charts, maps, graphs and signs that told some interesting facts about the utilities in the Northwest. Mr. "Robot Kilowatt" stood for nine days, twelve hours per day, talked to people, answered questions, waved his arms, blinked his neon eyes, smoked his pipe, kidded the people and amused them in many ways. In fact, he proved to be the largest single attraction at this most successful of the 287 National Housing Shows held throughout the country. More than 100,000 people called to see the old electric man during the show.

"Robot Kilowatt" was sponsored jointly by the Pacific Power and Light Co., Northwestern Electric Co. and Portland General Electric Co. The robot, although entirely mechanical, was nevertheless extremely human. He realized that he was among human beings and conducted himself as such. His talk was friendly to say the least, and he succeeded in telling a mutitude of people something about the electric utilities of which they had not known.

The person who stopped to look at this old electric man was greeted, "Hi, boy! Where did you get the cigar?" or with some other opening phrase to identify the person in the crowd to whom he addressed his remarks. Then, perhaps he would ask someone in the audience to light a cigar for him, and would puff at the cheroot in robot fashion, with the smoke bellowing from his nostrils. Needless to say, the life of the cigar was short. It took the mechanical man less than five minutes to consume one. He smoked a box of cigars every day, in addition to his occasional smoking of his pipe, and for that reason, it was necessary to buy the cheapest cigars on the market—but "Robot" didn't seem to mind.

After winning attention, the electrical mechanical man would turn the trend of conversation to himself—and the industry which he represented, saying: "Folks, I am old 'Robot Kilowatt,' being shown to you by the electric industries in this vicinity. I can talk, hear you talk, wave my arm, blink my eyes, smoke my pipe, and answer your questions. I am the daddy of all those little electric servants in your home, and any time they fail to perform to your entire satisfaction, I want to know it. Did you know, my friends, that we people who live in this great Northwest country

ELECTRIFY YOUR HOME
FOR THE SAME AMOUNT OF MONEY,
YOU CAN USE TWICE THE ELECTRIC
ENERGY AS THE AVERAGE NATIONAL CONSUMER
THESE CITIES WERE FOUND TO HAVE
"LOW and REASONABLE" ELECTRIC RATES
PRIVATELY OWNED UTILITIES SERVE THEM ALL

Mr. Robot Kilowatt, mechanical electrical man, who told the utilities' story to 100,000 visitors to the Portland National Housing Show so successfully that he has become a permanent institution in in that city

I am "ROBOT KILOWATT"—thanking the 100,000 of you who saw me at the National Housing Show.

Remember: If your electric servants are not performing to your **ENTIRE SATISFACTION** I want to know it.

Yours truly,
"ROBOT KILOWATT"
In care of Portland General Electric Company.

FISH vs. ELECTRICITY

● **FISH** in the sea cost nothing to produce. **BUT**, to get this fish on your table is a different story.

ELECTRICITY costs little to produce (generate). **BUT** to bring electricity into your home from distant mountains is **ALSO** a different story.

Yours truly,
ROBOT KILOWATT,
in care Portland General Electric Company.

Mr. Robot Kilowatt addresses customers monthly through a series of bill stickers. Here are two typical ones

have electric rates that were found by various governmental agencies to be among the lowest in the country? I should like to call your attention to the large map of the United States here on my right. Notice the four red lights flashing. These four cities—Buffalo, St. Louis, Washington, D. C., and Portland—were found to have electric rates that are, according to the New York Power Authority, 'low and reasonable,' and Portland, our own 'Rose City,' is one of them, as you see. You know, folks, an old electric man like myself eats up a lot of electricity. That is why I live in this part of the country where electric rates are low.

"And now, my friends, if you would like to see just what a robot looks like inside, I have my coat cut away in the back, so just step around and see for yourself. Yes, the little lady here, wearing a white coat and carrying a red purse, says, 'I think I'll take a peek at his back.' Well, now that's just fine, little lady, I won't ask to see your back.

"To my right, folks, is a beautiful picture of what Bonneville Dam will look like when completed and underneath it is a message from our good president Roosevelt, when in speaking to Oregonians he said, 'I wish the people in my part of the country could enjoy the low electric rates you have here.'

"Nice looking lady out here in front of me, wearing a beautiful smile, says, "I wonder what makes him talk?' Well, my dear lady, what makes you talk? You know, lady, I can tell you where your husband was a week ago last Tuesday night. What! You haven't a husband? Well, pardon me, would you mind writing your telephone number on my high, white collar?

"Folks, do you know that Oregonians use 1,100 kilowatt-hours per annum as compared with the national average consumption of about 550 kilowatt-hours? That is a fact. Gentleman in front of me asks, 'Why is that?' Well, my friend, it is because the electric rates in this part of the country are 'low and reasonable,' making possible a high kilowatt-hour consumption. And here is a message, folks, that I should like to have you take home with you. There are 32,000 electric ranges in use in Portland homes as compared with only 300 in the city of New York. This is because it is extremely economical to cook with an electric range in Portland due to the low electric rates."

So it was with the robot from 11 a.m., each day of the show—nine of them in all. This electric man kidded with people and told them in a light but serious manner facts concerning the electric utilities. Thousands upon thousands of people came to hear and enjoyed chatting with the robot, some trying to stick him with questions.

It was an experience which few would have thought possible. It was almost inconceivable that a person could stand and say the things that Mr. "Robot Kilowatt" said about the electric utilities and get away with it, but he did and his audience enjoyed every bit of it. Mr. "Robot Kilowatt" was extremely courteous and friendly at all times, never overlooking an opportunity to say something complimentary about someone in his large audience and something equally so about the three companies which he represented. There were times when the space in front of the booth was blocked by people who wanted to hear and see the robot.

The fellow who did the talking for the robot was concealed in a small, darkened broadcasting booth, with only a small peep hole through which to watch his audience. He wore a set of headphones connected to a microphone concealed on the robot through which he could hear people who addressed the robot, and he had to be on his toes at all times in order to hold the attention of the audience, amuse them and get his message over. The very finest radio broadcast equipment was used to make the robot talk. A powerful, dynamic speaker, located inside the robot's chest, made it possible to hear the voice of the electric man all over the basement of the large civic auditorium where the show was held.

We had people ask the robot this question, "Mr. Robot, why have we not been told these facts before?"

I have often asked myself this same question. Why have we not told the people more about our business? It has been told, but not where Mr. and Mrs. John Public could hear it or read it. It has been confined mostly to within the four walls of a utility office.

The meter readers, linemen, service men, salesmen, bookkeepers and billers haven't told it because they haven't known it. Ask the average electric company employee how much the average residential electric consumer's bill is per day and he will not know. Ask him how much taxes John Citizen pays per day and he will not know the answer.

It is true that such information is published almost daily, but where? In the trade journals that are read by the executives who check their name off the mailing list and send the magazine on its way. It is indeed well for us to swap ideas as we do through the various trade journals, but this is not enough. We must take our messages to the people. We must let them know that we are good, honest men and women engaged in the legitimate business of serving the public with a service that has, throughout its history, constantly grown bigger, better and cheaper, until today, it costs but nine cents per day. We must contrast this with the $1.10 per day the politicians charge for running our government.

We must go to the customer, the fellow who pays the freight, examine his appliances, advise as to their most economical use, help him to get more out of his electric service without additional cost to him—"Give a Little More." If people prefer to hear our story from a robot, let's have more of them.

●

Magazine For Reference With June Marked

To the Editor:

Sir—Were you to step into my office you would see a pile of current numbers of ELECTRICAL WEST which I keep at hand for ready reference. On top is the June number which I have been unable as yet to read as carefully as I intend to. I have it filled with markers so that whenever I can spare a moment, I may read some important article from this very splendid number. Your "convention in print" is a brilliant idea and brings a great deal of pleasure and profit to everyone who reads it. May I express my personal congratulations and appreciation to the editors.

JEANETTE I. REESE.
Southern California Edison Co.,

Build Me a Monument

LOOKING out the Pullman window across endless table-flat plains of Nevada, the gent whose lack of mental balance manifests itself in heaving pop-bottles at the umpire commented to Electra's Husband:

"There's a swell place for a baseball park."

It was. Rake off the weeds, run a steam roller over it a few times, and you would have perfect physical conditions for playing the national game.

The only drawbacks were economic. The nearest dwelling was fifty miles away, and it was a hogan occupied by a Piute and his squaw. To play baseball there must be baseball teams, and there must also be people to watch the games. But who worries about economics these days?

If anyone ever built a ball park in such a spot, his alarmed friends would take immediate steps to get him locked up in a nice padded booby hatch. Yet our widely-known and incomprehensible United States government is guilty of conduct not one whit less absurd, while a seemingly large proportion of the population is straining its tonsils to proclaim approval.

SURVEYS show that on the Pacific Coast, particularly in the Northwest, there is more undeveloped hydro power than anywhere else in the country. Statistics also show that there are fewer opportunities to make use of it than in almost any other section of the country. Yet the Federal government is spending millions of dollars to build a great hydro-electric plant in the Pacific Northwest. Why? I don't know, unless somebody thought that with so much water available here was a good place to build a power plant. With so much ice available, why wouldn't the North Pole be a good location for an ice cream factory?

As the Northwest acquires population, it will possibly absorb this electric power. That's going to be in that fair sometime about which you and I don't need to do any worrying. But any citizen of the Northwest who can justify the installation can get all the electric power he needs right now, and at reasonable cost, too.

STILL another great government-financed power plant is going into operation before many moons, and communities that a few years ago howled for it as a baby is alleged to howl for castoria are now in consternation over the obligations they have assumed. This is the power plant at Boulder Dam.

This great project was perhaps justified for flood control, and irrigation and domestic water supply purposes. But it's a safe bet that not more than one out of every thousand singers of "Oh, Say Can You See" ever think of it in such light. They look upon it as a great publicly-financed effort "to break the predatory power trust's strangle hold upon the throat of the people and restore to them their God-given heritage." (See speeches by Norris, Rankin, et al. This is stock material for a really telling speech for public ownership. Without it our leading p.o. advocates would be not only dumb but also mute.)

THE building of Boulder Dam meant the spending of a lot of money. But it has now been spent—or nearly so. And the time is close at hand when the completed Boulder Dam will not only cease spending money but will seek justly to do a little collecting. It's going to be manufacturing power, about four billion killowatt-hours of it every year, and it proposes to sell this power and be paid for it. Didn't these southern California communities sign contracts to buy the power?

Southern California has discovered that it has bought something it can't use. It really has an over-supply of electricity right now, and its present cost for power is less than this Colorado River power is going to cost. So why should southern California be interested? You wouldn't expect to sell sun-tan to the Abyssinians, would you? You wouldn't ship pineapples to Honolulu! Here's the ball park in the Nevada desert again. With much wailing and waving of the arms, southern California communities are asking the government not to be mean and nasty about those contracts. They really ought to have another year to think it over, so they can decide upon two things: What can be done with this electricity, and how can it be paid for?

Also, somebody has been rude enough to recall that the sovereign states of Nevada and Arizona signed up to take about 19 per cent of the Boulder Dam power output. Maybe Nevada figured on lighting up that mythical ball park for the unplayable games which there is nobody to attend. Maybe Arizona, a great poker state in its day, was trying to fill an inside straight, and having failed is presenting its best poker face in silence. Be that as it may, now that the time to make good on the contract is nearly at hand, hints to that effect from the government find Nevada and Arizona looking nonchalantly out the window.

AND there's the T.V.A.! In view of recent revelations, it is difficult to discuss it without a clamp over the nostrils. Never having been in the Tennessee Valley, I know nothing about it except what I have seen in the papers. But from what I gather, here was another ideal spot for a great power plant, —that is, there was plenty of water. It apparently mattered not that the Valley and adjacent territory, no matter what its development, can never begin to absorb the electricity it is proposed to generate here. "The water's fine; come on in" was the slogan, and Unk Sam has come in. Oh, yes, indeed! It has taken a steam shovel to handle the dough he has come in with. Spending money has been—still is—an administration hobby. The T.V.A. boys have demonstrated that in this particular art they are in a class by themselves. Nobody could toss money away so lavishly without special training. I wonder what college gives a course in bouncing the jack.

The T.V.A., having laughed off that "yard stick" idea, is going to make a heap of electric power.

We haven't any market for this power, we American citizens who have got to pay the fiddler, but boy! what a magnificent power plant!

I WISH I had the wealth of Rothschild. I'd go back to Squaw Diggins, where I was born and where even the postoffice was abolished 25 years ago, and I'd build me a skyscraper bigger than the Empire State Building. What? Oh, of course—I know it would never have a tenant, but what a monument, mister, what a monument! And I've got as much right to be nuts as the government has, provided I can afford it.

Engineering Symposium + + +

[*A monthly forum in which engineers will present and discuss their problems, this department is dedicated to advancing the art of power generation, transmission, distribution and utilization*]

Group Testmeter Calibration With Controlled Time Intervals

Technique of Group Testing of Rotating Standards Improved by Accurately Adjusted Frequency Generator. Elimination of "Transfer Error," Saving in Time and Labor, and Greater Accuracy Obtained by New Method

By LESTER L. CONRAD
Supervisor of Standards Laboratory, Southern California Edison Co., Ltd.

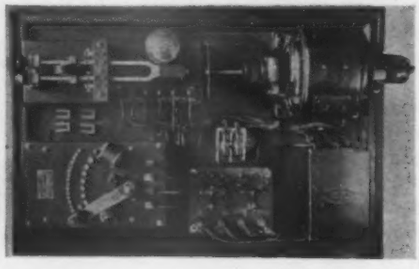
ECONOMIC requirements of the past few years have made extended demands on the electric utility companies for metering equipment, with suitable performance characteristics to meet a wide range of operating conditions. These demands have been acknowledged in the several classes of modern watthour meters as now produced by the electrical manufacturing companies. These modern meters are the product of co-ordinated engineering design and manufacture to fulfill service requirements and with the result that a vast improvement in the operating characteristics of the newer meter is quite apparent when compared with the performance of the older type meter. This is especially true at extremely light loads, excessive overloads, or at low inductive loads.

Concurrently with the general betterment of the service type meter, it was also recognized that improved testing equipment would be required. This was accomplished by the introduction of many new and novel features in the design and manufacture of the rotating testmeters against which the service meters are compared and adjusted. These improvements not only provide a betterment in the characteristics of the testing equipment, but also tend to insure a betterment in the performance of the service meter.

By virtue of the general betterment thus produced it was then quite obvious that due concern would be required in a relative improvement of the standardizing equipment and procedures employed in the determination of testmeter accuracies. Suitable standardizing laboratory equipment, such as standard cells, potentiometers, voltmeters and wattmeters have been available for many years. The accuracies of the modern laboratory standard instruments for measuring units of potential, current, and power, are usually found to be well within reasonable limits and but little difficulty arises therefrom; however, there are other problems which have required a considerable amount of attention.

It has been customary to employ the certified laboratory standard instruments to determine the accuracy of a selected laboratory testmeter, which is then later used as a transfer standard against which other rotating testmeters are compared and adjusted. The use of such a transfer standard has been found to introduce many transfer errors which are difficult to eliminate or control. These transferred discrepancies are occasioned by variables of inherent or room temperatures and the inability to maintain the precise components of power during the various separate and distinct test intervals, which makes later cross comparisons quite difficult.

Fig. 1—Plan view of the tuning fork, rotary converter and transformer with the starting rheostat and switches as mounted on a common base for table use. In this form the entire assembly is readily moved as a unit, if and when deemed advisable



As one solution of this problem group testing is sometimes employed. In group testing several testmeters are simultaneously compared with a selected and certified rotating transfer standard. This method has been used with some satisfaction except for those unavoidable errors, which are inherent in the selected transfer standard. These errors are reflected in the results indicated by the testmeters under test. Such errors can be avoided only by the elimination of the transfer standard and the adoption of a standard "watts-time" method. In the watts-time method the testmeters are compared directly with a certified laboratory standard wattmeter over a given time interval.

In the procedure of group testing several testmeters can be subjected to the same temperature and circuit conditions simultaneously and thus eliminate many variable errors. The only factors limiting the number of testmeters in one specific test are governed by the related capacities of the testing equipment and the equipment under test. In the group test procedure the errors of all testmeters, in a given test, are rendered in comparable terms of the standard wattmeter and the time interval involved, hence the expression, "watts-time method."

In the watts-time method of certifying the errors of rotating testmeters one of the important factors is the time interval over which the testmeter is to operate for a given load point. Referring to the power equation, we find

$$W = \frac{RK3600}{T}$$

where

W = Power in watts
R = Revolutions of the testmeter
K = Watthour constant of the testmeter
T = Time interval in seconds

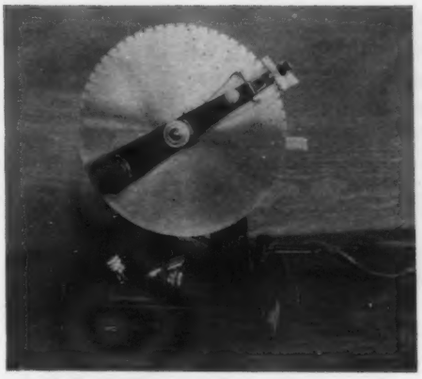


Fig. 2—Synchronous motor driven interval disk, on which is mounted a fixed initiating contactor and a movable selective completing contactor. The selective completing contactor can be set for a time interval of thirty seconds or more, with an additional vernier adjustment for 0.05 sec. through the sturdy spring leaf and set screw momentary contacting arrangement shown mounted on the supporting base

We transpose and find the time interval (T) to be

$$T = \frac{RK3600}{W}$$

from which we observe that for a given power load (W) a definite number of revolutions (R) of the disk must be recorded in a definite time interval (T) to indicate the registration of the testmeter.

Due to the difficulties encountered in any attempt to measure the time interval (T) for a specific number of revolutions (R) it has been found to be quite practicable to further transpose the power equation to permit the recorded revolutions (R) to be analyzed in terms of per cent registration (error) for a specific time interval (T), i.e.:

$$R = \frac{WT}{K3600}$$

from which it is obvious that for a given power load (W) and a definite time interval (T) the revolutions (R) will be representative of the registration accuracy of the testmeter.

The time interval (T) and the power (W) being major factors subject to the personal errors of the laboratorymen, every effort is made to eliminate these variables and thereby increase the accuracy of the certification.

The true power (W) being the primary objective of the test, the correct revolutions (R) are usually calculated as a fundamental factor depending on the load point and time interval involved. The time interval (T) is usually arbitrarily selected to permit simple relations with respect to the testmeter disk constant and the load point of the test. In most cases the time interval (T) can be reduced to two points, i.e.: 120 sec. for the heavy load and high power factor tests, and 240 sec. for the light loads and low power factor tests, which, under most conditions, permits a sufficient number of disk revolutions to reduce the value of the register subdivisions to a comparatively small indicated error.

These standardization problems have been recognized and treated by the different electric utility companies according to the specific conditions embodied in their individual testing procedures. Several articles have appeared in various trade journals and many reports have been submitted in engineering committee meetings outlining the use and application of the various time interval devices employed in the determination of units of time. Of these devices, the majority are governed by a second beating master clock with various adaptations of relays for the control of the testmeter potential circuit. The limitations of oscillating-pendulum contacts and delicate relays often cause inaccuracies in the time interval produced by such equipment.

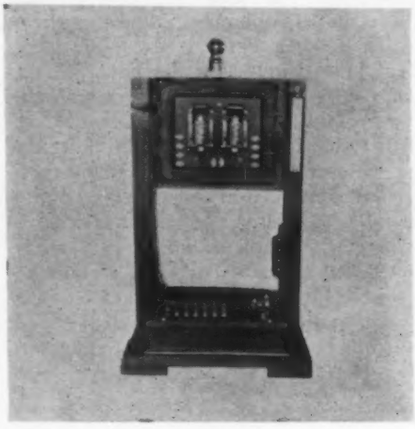


Fig. 3—Initiating and completing relays, also a seven pole double throw initiating and completing selector switch and a single pole correcting reset switch

It is the purpose of this outline to describe a method and means of utilizing a constantly regulated "speed-time" source of energy operating a synchronous rotating device to provide the time intervals required. In this method the functions are accomplished through the use of rotating equipment, thereby eliminating many delicate relays and controls required in the use of most oscillating pendulum devices.

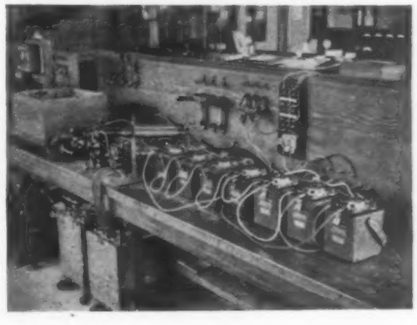
The equipment herein described was manufactured by the Leeds & Northrup Co. Some modifications to their regular time interval apparatus were made to meet certain requirements of the standardizing procedures used by the Southern California Edison Co. Ltd. test department at Alhambra.

This method employs the use of a tuning fork, rotary converter and a transformer as the means of supplying an alternating current at a constant frequency, required for the speed time source. A synchronous motor driven disk, relays and control switches furnish the means of converting constant speed into selected time intervals, during which excitation of the testmeter potential circuit is permitted.

The operation of the time interval equipment requires a direct current source of less than 1,000 watts at 110 volts for the excitation of the rotary converter and the actuating coil of the tuning fork. This supply can vary from five per cent above normal voltage to five per cent below normal voltage without causing the rotary converter and tuning fork to slip out of synchronism. Suitable rheostats are provided for operating the device through a range of 95 to 125 volts.

The electrically actuated tuning fork automatically maintains the armature of the rotary converter at a constant speed. This is accomplished by a circuit from the positive polarity of the direct current source through a vibrating contactor on one prong of the tuning fork which, alternately, makes momentary contact with the 110-volt terminals of the secondary winding of the transformer. The momentary impulse circuit is continued from a center tap on the 110-volt secondary winding of the transformer through the control field winding in the rotary converter, and is completed to the negative direct current polarity. The strength of the auxiliary control field is a function of the rectified alternating current output

Fig. 4—Relays and selector switch assembly conveniently located between two large laboratory standard wattmeters. A potential phase shifter, potential regulating transformers, induction regulator, carbon rheostat and other minor equipment used in procedures are also shown



of the rotary converter and is either added to or subtracted from the excitation of the regular direct current shunt field winding.

The 75-volt primary winding of the transformer is energized from the slip ring output of the rotary converter, which provides an electrically coupled relation between the selected period of the tuning fork and the speed of the rotary converter. This consequently maintains the converter armature at a constant angular velocity, dependent upon the period of the tuning fork and hence the converter produces a source of alternating current at a constant frequency.

The range of placement for the weights on the prongs of the tuning fork provides natural periods of from 25 to 60 cycles per sec., with a like range of selected frequencies being available in the output of the equipment. Such an arrangement furnishes a source of energy which can be utilized electrically for investigations involving constant frequencies, or mechanically, through the synchronous

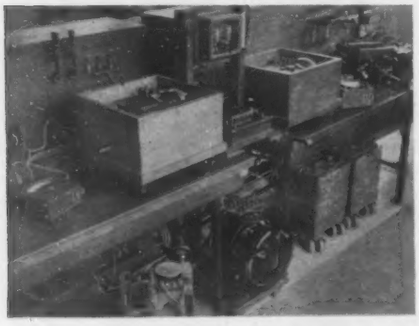


Fig. 5—A group of seven testmeters, connected for standardization, are being tested, all being under the same circuit conditions during the test interval

motor driven disk, for investigations involving time intervals.

The time interval disk is driven by a one-tenth horsepower, 110-volt synchronous motor energized from the regulated alternating current output of the rotary converter. The motor and disk are conveniently connected through selective reduction gears to provide one revolution of the disk in either one or two minutes.

The nine inch disk is fitted with two contact operating fingers which project beyond the edge of the disk and provide the initiating and completing operations. The initiating finger is permanently attached to the disk. The completing finger is mounted on a movable arm, which, when released, may be set and secured in any one of the thirty equi-spaced notches, six degrees apart, machined in the edge of one-half of the periphery of the disk. A vernier adjustment provides a further setting of one-twentieth part of the space between notches. Therefore, at a disk speed of one revolution per minute each machined division represents a time interval of one second, and each vernier subdivision corresponds to an interval of 0.05 second.

Thus the constant angular velocity, or speed time, of the rotating disk is converted into time intervals through the contact operating fingers, which, when passing, depress two trip spring-leaf keys counted on the base. A circuit through these trip keys operates two relays by which the potential circuit to the testmeters is either energized or de-energized. Large contactors of sturdy construction are provided on the trip key assembly. Adjustments are provided for compensation where necessary, and all vital parts are readily accessible for inspection and maintenance.

Through the use of two sturdy direct current relays equipped with contactors for the testmeter potential and con-

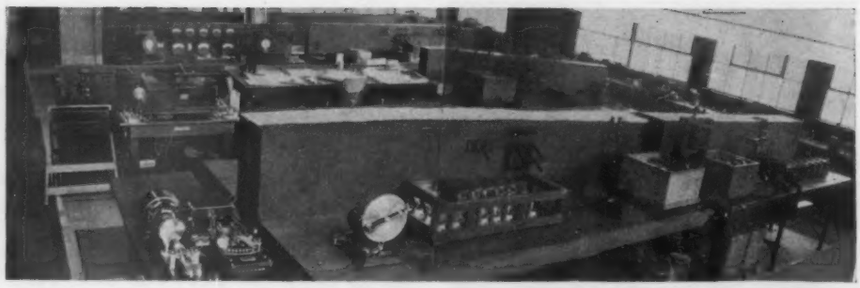


Fig. 6—General view of the equipment as normally set up in the Test Department Standardizing Laboratory of the Southern California Edison Co., Ltd.

tactors for operational functions, the testmeter potential circuit is both energized and de-energized through the same sequence of relay operations, thus subjecting the same uniform time delay in both the initiating and completing operations. The operational selection is obtained through the use of a seven-pole, double-throw, manually-operated switch, and a single pole, single throw momentary circuit breaking reset switch, which are set to produce the desired operation.

This equipment has been in use for over six years with entirely satisfactory performance, and without any repair or maintenance costs except one set of replacement contactors for the tuning fork. During the past two years the device has been in almost continuous daily service with but negligible time errors.

● ●

New Navy Electric Shop

Bremerton Navy Yard took advantage of PWA funds for the installation of new lighting and machine equipment and the construction of this new machine and electric shop

Power Costs for Combination Systems

By WARD B. KINDY
and
OTIS M. WIGHT
Electrical Engineering Dept.
Stanford University

THE annual cost of electric power in a large regional system supplied by low-maintenance water power plants over transmission lines, supplemented by modern high efficiency steam stations located at the load centers, varies with the load factor and the apportionment of the load between the water and the steam stations. The proper division of load in such a system is determined by a number of factors chief of which are the fixed investment costs and the variable operation charges.

The annual cost of power from hydraulic developments is made up almost entirely of fixed investment charges on the capital used in the construction of hydraulic works, power plants, and transmission lines and is usually high compared to the investment costs for steam power plants delivering equivalent amounts of power to the distributing system. The total annual costs, however, for energy delivered by steam power plants, which use fuel in proportion to the kilowatt-hours supplied, usually exceed those for hydro power. The most economical operating combination of steam and water power capacities, therefore, is determined roughly by the capital cost per installed kilowatt of hydro and the capital cost per installed kilowatt of steam plus the cost of the fuel used. It is quite obvious that in an existing system composed of definite hydro and steam capacities the best operating arrangement would be the one which would allow the hydro plants to operate as much of the time as the water supply would permit and the steam plants to use as little fuel as possible. In most cases this would be equivalent to placing the base load on the water and the peak load on the steam.

The curves shown in Fig. 2 have been drawn to illustrate the effect produced on the annual power cost by providing different percentages of installed capacities of steam for carrying the peak loads in a system having a kilowatt-kilowatt-hour curve as shown in Fig. 1 with an average yearly peak of 500,000 kw. and a load factor of 60 per cent.

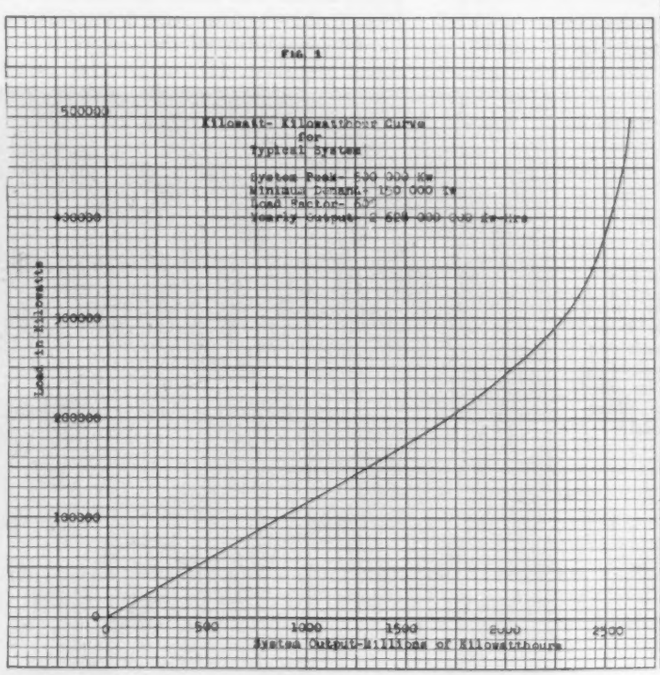
The capital cost of the hydroelectric part of the system, including the transmission lines and receiving substations, was taken at $400, $300, $200, and $100 per kilowatt. The capital cost of the steam installation was assumed to be $100 per kilowatt. The fuel costs used were $8, $6, $4, and $2 per ton for coal which corresponds approximately in b.t.u. content, to oil fuel at $2, $1.50, $1, and $.50 per bbl. A steam reserve capacity of 20 per cent of the average yearly peak (100,000 kw.) was assumed for all combinations.

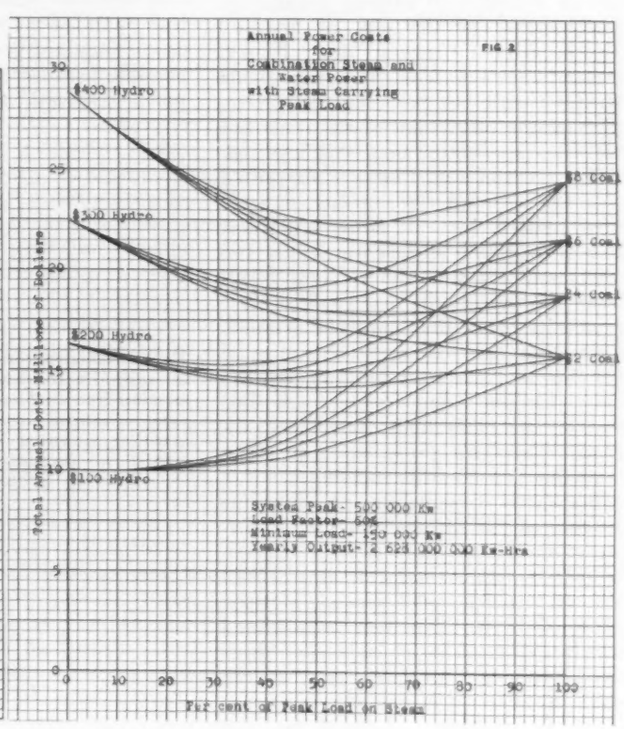
The annual costs were calculated in accordance with the cost data in George A. Orrok's paper "The Economics of Water versus Steam Power" delivered before the World Engineering Congress in 1929. The hydro fixed charges were assumed to be 12.5 per cent; operating costs were $2.60 per kw. per year, and the transmission operation charges, including receiver substation, were $2 per kw. per year. The steam plant fixed charges were taken at 15 per cent on $100 per kilowatt of installed capacity. Labor, maintenance, and supplies were 0.15 cent per kw.-hr. in addition to the fuel costs.

No attempt has been made in this analysis to include the cost of distribution. The results indicated by the curves represent the annual outlay for power at the point of delivery to the

Fig. 1 — Kilowatt - kilowatt - hour curve for a typical system having a system peak of 500,000 kw.; a minimum demand of 150,000 kw.; a load factor of 60 per cent; and a yearly output of 2,628,000,000 kw.-hr.

Fig. 2 — Annual combined power costs for combination steam and hydro system carrying peak load





Data for Kilowatt-Kilowatt-Hour Curve

Per Cent of Peak on Steam	Installed Capacity Kw./1000 Steam	Water	Load Factors Steam	Water	Kilowatt-hours (millions) Steam	Water
0	100	500	0.0	60.0	0	2628
10	150	450	6.4	66.0	28	2600
20	200	400	10.6	72.3	93	2535
30	250	350	15.0	79.2	198	2430
40	300	300	19.0	87.3	333	2295
50	350	250	29.8	93.0	594	2034
60	400	200	34.6	98.0	910	1718
70	450	150	43.2	99.5	1324	1304
80	500	100	50.0	100.0	1752	876
90	550	50	55.5	100.0	2190	438
100	600	0	60.0	100.0	2628	0

distribution system and do not in any way show what the ultimate consumer pays for his kilowatt-hour.

We find from the curves that, with hydro power at $300 per kilowatt and coal at $6 per ton, or oil fuel at $1.50 per barrel, the most economical operation would be obtained with enough installed steam capacity to supply 50 per cent of the peak load at an annual cost of $18,500,000. The annual cost for supplying the whole load from steam power stations would be $21,700,000, while hydro power with a 20 per cent standby steam reserve would cost $22,500,000.

The fixed cost data used in the determination of these relations has been so chosen as to represent approximate average conditions throughout the country and may be at variance with the prevailing values in certain localities. The chief purpose of the study, however, has been to emphasize the fact that the proper assignment of the load is important from an economical standpoint. To make the picture still more general and complete other series of curves might be drawn for other load factors. The curves would be similar to those shown, of course, but the lower load factors would indicate increased annual costs per kilowatt-hour.

A Transmission Line Without Towers

By V. H. STRANDBERG
Associate Engineer, Seattle City Light Department

WHEN the U. S. Forest Service decided to build a road up the Skagit River canyon, a new problem was presented to the engineers of Seattle's City Light Department. For almost a mile the road was to be hewn out of a rock cliff closely paralleling the location of the city of Seattle's Skagit River Railway and 165-kv. transmission line from its hydro plants on the Skagit. A perpendicular precipice on the other side of the river left no other alternative than this location.

The transmission line was supported over the railroad right-of-way on span wire construction. It is an important link in the power supply for Seattle and accidental outages which might result from blasting for the new road in close proximity to the line had to be avoided. Relocating approximately one mile of the line was the only solution and the only possible route for the new line was on the cliffs high above the railroad. This also presented a problem requiring considerable ingenuity.

Standard construction on this line consists of "H" frame wood pole towers at an average span of approximately 600 ft. The conductor is 477,000-circ.mil A.C.S.R. with spacing between wires of 15 ft. The line is insulated with ten units of 10-in. suspension discs in suspension positions, and eleven units of 11-in. high strength insulators in strain positions. Liberal use was made of 4-pole strong towers throughout the line.

Where the relocated portion of the line rounded a point of the cliff the use of standard construction proved impossible because of the excessively high poles required, and the necessity of blasting pole settings in hazardous locations high above the railroad and transmission line. Steel arms anchored and guyed to the cliffs solved the problem. The arms, 60 ft. long, consist of two 8-in., 11.5-lb. channels latticed together forming a beam 18-in. wide. The inner or ground end is pin connected to 1½-in. by 4-ft. 0-in. bolt set in the rock.

This also acted as a pivot about which the arm was raised during erection. The outer end and mid points are supported on a double ⅞-in., nineteen-wire, galvanized guy strand anchored to eye bolts set in the rock above. The arm was side guyed to prevent movement along the line. The entire structure was bolted together at the tower site.

At Tower 50, additional ground clearance was required. This was accomplished by securing the inner end of the arm to a tripod 10 ft. high, made of 6-in. "H" beams. All joints were pin connected, and all anchorages 1½-in. eye bolts. All guys were made up in the shop to calculated lengths.

Field work was reduced to the drilling of holes, setting of eye bolts, bolting up the arms and lifting them into place, all done in less time than would have been required to blast the holes required for setting poles for the conventional three-pole angle towers required in these locations.

Conductors were cut and spliced to those already pulled into the new location. The new section of line was then sagged in and the splices made at the other end, after which the line was clipped in on the new towers. The entire transfer was made in less than 12 hours, a very fine record considering the inaccessibility of the towers.

Novel construction used to support 165-kv. transmission line in Skagit canyon; crossarm supporting member mounted on steel tripod to increase clearance to ground

Maintenance Practice—I

Induction Voltage Regulators

By ARTHUR ADAMS
San Carlos, Calif.

IN a great many cases voltage regulators of the inductive feeder type are put into service and given no attention unless trouble develops. In those cases where inspection is occasionally given a definite complete routine check is not made.

The following program is offered as a complete check and has been found to work out very satisfactorily. It is recommended that it be given at least once every three months.

Equipment:

A voltmeter, pair of 12-in. bellows, cup grease, lubricating oil, a small quantity of gasoline and a generous supply of clean wiping cloths.

The regulator to be inspected need not be taken out of service but all leads, insulated or otherwise should be treated as *hot* and worked around as though they were bare. If too close contact with these leads cannot be avoided, a rubber blanket or other protective device should be used.

1.—Cut out the motor control switch and check to be sure the motor is cut out. This is most readily done by closing the motor relay by hand to try the motor. With the bellows give the entire top of the regulator a good blowing out, especially the motor and the motor relay switch. These two devices seem to collect the most dust.

2.—Examine the motor oil wells and see that they have sufficient oil, fill all grease cups (or alemite) and apply a little grease on the various gears. Squirt lubricating oil on the felt washer underneath the main gear. This lubricates the top of the main bearing of the rotating element of the regulator. Wipe off all surplus oil and grease.

3.—Inspect the motor brake. Try to turn the motor by hand with the brake set; this should be impossible If the motor turns, the brake should be set tighter. Next release the brake and turn the motor by hand to check for brake drag. The brake will often be found to require some adjustment due to wear. If oil has collected on the brake, the brake shoes should be opened up and shoes and brake drum wiped off with a cloth soaked in gasoline and then wiped dry with a clean cloth.

4.—With the brake off, turn the motor several turns to the right and then back and several turns to the left to check the overall motion of the regulator. The regulator should turn freely in both directions; if not look for mechanical binding of the gear train or brake drag.

5.—Inspect the motor relay switch. Push the armatures closed one at the time and if there is any tendency for them to stick or hold closed, the faces of the armatures should be wiped off with a gasolined cloth and a dry cloth. Check the motor relay interlocking device to be sure that both sets of contacts cannot be closed at the same time by holding one set closed and trying to close the other set at the same time. If the relay contacts are pitted or burnt, they should be dressed up with a fine file. Inspect the flexible leads to the movable contacts for fatigue or broken strands; these will often be found to need replacing.

6.—Check over all low voltage control leads to the regulator to see that none are loose or broken. Inspect the regulator tank for any oil leaks and check the height of oil in the gauge.

No. 1 of a series of 1-page articles on maintenance of apparatus and equipment —the Editor.

7.—With the bellows give the compensator and contact-making voltmeter a good air cleaning. Inspect the compensator to see that the switch lever arms set tight on their contacts. If any adjustment is necessary at this point that would endanger opening of the current coil circuit, it is advisable to let the work go until such time that the regulator can be taken out of service.

8.—Inspect the contacts of the contact-making voltmeter. Unless the contacts have been badly burned or pitted the less touching up they get the better. Usually a good air cleaning with the bellows will suffice. If touching up of the contacts is necessary, a very fine grade of sandpaper should be used with care that all sand dust is removed from the contacts after the work is done; otherwise severe sparking will occur on the contacts. The pivot bearings should be snug but not binding and the guide bearing on the bottom of the voltmeter plunger should be free. If it is gummy wipe it off with a little gasoline on a cloth. The plunger or armature of the no-voltage reversing relay should be closely examined and determined if it will drop free should it be de-energized. Check all set-nuts on the voltage adjustment screws and on the warming coils to see that they are tight.

9.—Turn on the motor switch and let the regulator adjust itself to its automatic position. Check the voltage at the regulator to see if it agrees with the desired feeder voltage. If a recording voltmeter is used in conjunction with the regulator, it can also be checked at this time for accuracy. Next lift the plunger on the contact-making voltmeter and allow the regulator to run down several points and release it. When the regulator comes back to rest note the voltage and then hold the plunger on the contact-making voltmeter down and run the regulator up a few volts. Again release it and allow the regulator to come back to normal position and again note the voltmeter reading. The difference between the two readings should not be over one volt. Usually this is about as close as it is advisable to set the contacts on the contact-making voltmeter unless the bus voltage is very steady. In some cases the regulators can be made to operate within one-half a volt regulation but this depends upon the steadiness of the bus voltage and the feeder load to a great extent. Generally it will be found that if the regulators are adjusted too finely, considerable working of the regulators will develop and very little advantage in regulation gained.

When making adjustments on the compensator or contact-making voltmeter, an insulated stool or mat must be provided to stand on.

Finally, with a damp cloth the glass on the contact-making voltmeter is cleaned and polished with a dry cloth. Lint tending to stick to the glass can be blown off with the bellows.

Heavily loaded regulators, especially need good ventilation for cooling and if forced draft or other means are provided for this purpose the equipment should be examined and a check upon the air supply made to determine whether or not each regulator is getting the proper amount of cooling air. Outdoor type regulators should be checked to see that nothing obstructs the air draft around the regulators.

In special cases such as water-cooled regulators, other tests will be necessary such as testing water coils for leaks and rate of flow, in addition to the general cases.

If the check is made in the prescribed manner, a great many regulator ills can be cured before they develop and burnt out motors, poor regulation and other difficulties can be avoided.

In the Realm of Science + + +

[Devoted to the research and scientific developments which affect the electrical industry and which are being carried on in the engineering departments of Western universities. Edited this month by H. V. Carpenter, Dean, College of Engineering and Mechanic Arts, Washington State College]

Economic Aspects of Grand Coulee

THE construction of power plants on the Columbia River at Bonneville, 40 miles east of Portland, and at Grand Coulee, 90 miles west of Spokane, will provide the Northwest states with an abundance of power, suitable markets for which must be found if full advantage is to be taken of these developments. Preliminary surveys have been made by the Engineers of the United States War Department as described in *The Columbia River and Minor Tributaries*, in which an attempt has been made to find suitable commercial uses for the power.

Additional studies are being made along these lines, for example, the State of Washington has established at the State College of Washington a special metallurgical laboratory primarily for the study of the production of magnesium metal and the related light alloys from magnesite ores which are abundant in northeastern Washington, the possibility of the production of aluminum from abundant deposits of clay in Washington and Idaho, and the development of ferro-alloy production from Northwest resources. Preliminary laboratory studies are promising in all of these fields. A thorough statistical analysis has been carried on by the college of the use of power for the production of aluminum with a study of all known methods, and also of the possibility of developing a phosphate fertilizer industry utilizing the electro-thermal process with the vast deposits of phosphate rock in Montana and Idaho. This latter shows the possibility of supplying phosphate fertilizer to the entire western portion of the United States, and perhaps to many foreign markets.

It is now apparent that the Grand Coulee development will ultimately include the irrigation of the 1,200,000 acres of land available for fruit and general agriculture which will provide homes for some forty to sixty thousand families with the attendant development of cities and industry. Analyses of new industries which should prove successful in the Northwest are being carried out, and it is felt that the resulting increase in density of population resulting from this vast irrigation scheme will make many industries successful which have not so far been undertaken.

Another related study being carried on by the Engineering Experiment Station of the State College of Washington is a study of the possibility of residence heating by electricity. The contractors' camp at the Grand Coulee Dam site on the Columbia River, known as Mason City, is heated thoroughly by electricity. Two hundred and eighty-six small residences and more than sixty bunk houses and dormitories are so heated. The Engineering Experiment Station has taken advantage of this opportunity to study both the economic and technical problems involved. Meters were placed in individual houses by the contractors and records have been kept which will show the diversity of use among different families, the overall load curve of the community and the relative magnitude of the heating load to the ordinary use of electricity in residence service. The tests are being carried out by H. J. Dana and R. E. Lyle of the Experiment Station staff.

A study has also been carried on to bring out the relative values of different types of wall and ceiling insulation of houses of this type. For this test a number of houses were provided with six different kinds of building insulation. The houses were all identical, each made up of living room, kitchen, bed room, bath room, and closet, measuring 20x28 ft. overall, one story. The standard construction was matched siding, tar paper, ship lap sheathing, studding and inside finish of ½-in. "Insoboard" (a wheat straw product somewhat similar to "Celotex"). In certain of the houses, additional heat insulation was provided, two houses having 1 in. of "Thermax" (consisting of wood shavings impregnated with a magnesite binder with plaster directly on the Thermax) two with "Metallation" (a heavy craft paper coated on each side with bright aluminum foil). This was mounted on the inside of the studding and beneath the ceiling joists, then ¾-in. firring strips were applied, followed by the "Insoboard." One house was insulated with "mineral wool," which in this case was made from the slag of a lead smelter spun into very fine threads and loosely packed into the air spaces between the studding and laid 3-in. between the ceiling joists.

Two houses were equipped with "Zonolite," which is a natural product from Montana which when heated expands until it weighs only about 10 lb. per cu. ft., and is applied as a wall filler in rather finely sub-divided form. Two houses were filled also with "Unifil," a similar material processed by another firm, and the ceilings of two houses were covered with "Diatomite," pulverized diatomacous earth. Tests have been carried on during the past winter with these houses comparing them against other identical houses with standard construction. The results are given in bulletin No. 45, Engineering Experiment Station, State College of Washington. Savings in heat loss up to 40 per cent are shown. While conditions could not be controlled as accurately for these tests as is possible in laboratory tests of smaller wall surfaces, it was felt worthwhile to carry them out under actual working conditions in residences.

Tests have also been initiated and will be continued during the summer on air-conditioning, using some of the same houses used in the heat loss tests in order that the relation between the power consumption for air conditioning in the summer time as compared to that required for heating in the winter months can be determined. These results will, of course, be purely of local value, although the general advantages of air conditioning should be well demonstrated.

Tests are under way also on a form of heat storage which seems not to have been thoroughly tried out. In one of the Mason City houses a storage "oven" was built in the basement in which heat from electrical units is stored by natural circulation of air among granite boulders which were available on the site. The oven is insulated with brick, mineral wool, and hollow tile, and a fan provided by which air from the rooms can be circulated through the oven and blown into the rooms at a proper temperature for heating. The granite boulders or other similar solid material has several advantages over water, which has been used in most storage experiments:

1. Heat from the solids can be delivered to the rooms by air circulation, thus simplifying the addition of air conditioning.
2. In most cases solid material can be obtained more cheaply than water in tanks.
3. There is no danger from too high temperatures causing explosions.
4. The boulders can be heated to enough higher temperature to offset their lower specific heat.

The storage oven was not completed in time for the coldest weather of the past winter, but sufficient use was made of it to show that entirely satisfactory service could be given. This plan brings out the following advantages resulting from a storage device:

1. The load becomes essentially off-peak so that a decided improvement in the load curve can be accomplished.
2. Brief interruptions in power service are not so critical.
3. The maximum installed capacity of the heaters need not be as great as the maximum rate at which heat can be thrown from the shortage into the residences.

Usually this maximum heating demand will come earlier in the morning than the morning peak of the normal power load of the system so that customers can use both stored heat and direct heat during the morning warming-up period. This will enable service to be given with a smaller connected load and so at a lower cost for the distribution system and with a much better daily load factor. The reduction in maximum demand will also make the yearly load factor of the heating load considerably higher. The consumer will share in these advantages through lower rates, through a greater feeling of security against interruptions, and a more complete control over the heat to be used at any time.

Against all these is the cost of the storage device, and it is hoped that by continuing these studies during the coming winter a satisfactory analysis of these relations can be worked out. A progress report on the "oven" tests is given in Engineering Experiment Station Bulletin No. 46.

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Contact Difference of Potential Studied

WHEN plates of two dissimilar metals are placed opposite one another in a vacuum a difference of potential is automatically set up between their surfaces. This difference of potential is equal to the difference between the external work functions of the two metals, where the external work function is defined as the work required to transfer an electron from the surface of a metal to a vacuum. Since its discovery by Volta in 1801 this "contact difference of potential" has been the subject of numerous investigations, but with the development of modern high vacuum technique it has become clear that the available measurements are largely valueless because of the fact that the metal surfaces measured were not free from adsorbed gases and other contaminations which profoundly affect the work functions. At the same time new developments in the study of metals have emphasized the value of such measurements if they can be made under satisfactory conditions. They offer an independent method of determining the work functions of metals, characteristic constants which are fundamental both in the electron theory of metals and in the technical design of thermionic and photo-electric devices.

Dr. Paul A. Anderson of the Department of Physics, State College of Washington, has made an intensive study of the contact difference of potential between tungsten and barium with the purpose of developing a generally applicable method of measuring contact potentials under the most rigorous conditions possible. Extreme outgassing of surfaces in a vacuum of the order of 10^{-8} mm. of mercury was found to be essential, but when these requirements were met highly reproducible measurements could be secured. The value 2.13 volts was found for the contact difference of potential between tungsten and barium; 2.39 equivalent volts for the external work function of barium.[1] The methods which have been developed are being applied in a systematic study of the work functions of the other important metals. The extreme sensitivity of work functions to slight traces of absorbed material is being turned to account as a powerful means of attack upon adsorption problems, which involve the forces operating to hold atoms together.

●

Cathode Ray Microscope Expands Field of Optics

THE fact that properly shaped magnetic and electric fields can act on cathode rays in a way similar to that in which glass lenses affect visible light leads to an interesting field of investigation known as electron optics.

A properly designed electron or cathode ray microscope can expand our knowledge in at least two directions. The first possibility has to do with making visible the local and temporary emission from all kinds of cathodes and from other electron emitting bodies. This is being undertaken in Germany with considerable success. The second possibility is concerned with making visible hitherto inaccessible little particles and details. That this is fundamentally possible may be expected due to the shortness of the de Broglie wavelength associated with fairly high speed electrons.

With an optical microscope the smallest object which can be resolved is theoretically one-half the wave length of the light used for illumination. Magnifications of the order of 2,500 are rarely attained with good resolution. With the electron microscope a magnification of 10,000 need not be unusual and as high as 50,000 times is entirely possible.

K. E. Fitzsimmons and Edmund Kahl of the Department of Physics at the State College of Washington are at present constructing a magnetic cathode ray microscope for the purpose of observing extremely small particles and for the study of the electron emission from the various faces of single metallic crystals.

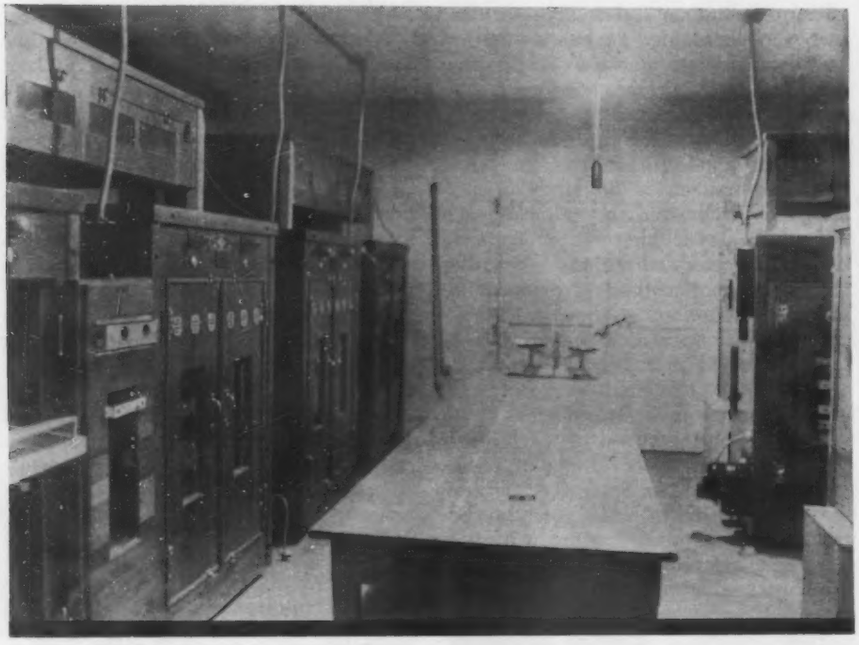
●

X-Ray Analysis of Crystals and Atoms

THE importance of x-rays in industry and medicine cannot be overestimated. It must not be forgotten, however, that x-rays were discovered as the result of the pure research on the conduction of electricity through gases carried on by Roentgen in his physics laboratory in 1895. Physicists today use x-rays for the analysis of materials and for conducting experiments furthering our knowledge of the nature of matter and of radiation. A beam of x-rays may be separated out into its different wave lengths by reflection from a crystal surface, much as ordinary light can be separated out into a prism or by reflection by a grating. A still better method for effecting a more complete separation is to reflect the x-rays from two crystals in tandem. This method is called the double crystal method.

Professor Stephenson of the Physics Department of the State College of Washington has set up a double crystal x-ray spectrometer and is now using it to study the absorption of x-rays of different wavelengths by thin sheets of various materials. This work is of interest because in the absorption process some of the energy in the x-ray beam is spent in knocking electrons outside of the atoms in the absorber. One has here, then, a method for following these electrons, knocked away from their parent atoms, about inside the absorber to see in what directions and with what velocities they may travel. Such studies, besides telling us how these electrons move, may yield important information on how atoms are held together in the crystalline state.

[1] Paul A. Anderson, Phys. Rev. 47, 958 (1935).



Interior of air-conditioned incubator room, showing electric controls on incubators

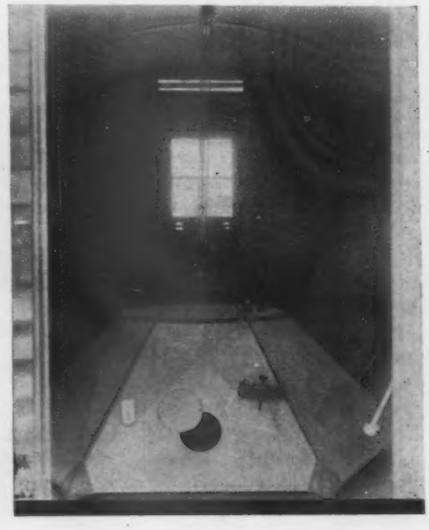
Electricity Cuts Mortality of Turkey Raising

BESIDE a correctly-reared turkey, the average coddled Pekinese has had a life of neglect. Because the turkey business is a scientific one, the major problem is not in finding a market, but in bringing the birds safely through the period between the egg and the platter. This period is filled with dilemmas.

For example, heat is necessary for the proper development of the birds, yet they are more easily killed by heat than by cold. This makes the case of the Boston Land Co., one of the largest and most successful turkey farms in the West, doubly interesting, because the company operates near Kettleman Hills, second hottest spot in California, where the temperature hovers around 110 degrees for weeks, with a daily differential of 40 or 50 degrees.

The profitable operation of the turkey farm is made possible by electricity—air conditioning, to be specific. Nearly 200 kw. of load is connected to lines served by San Joaquin Light and Power Corp. from the incubators, hatchers, brooders and pens.

This by no means is the total connected load of the Boston Land Co., because its 55,000 acres is given over chiefly to grain, with electric pumps for irrigation. Also, partridges are bred here for sale to fanciers and clubs the world over, and as some of the partridges are frail, valuable species from far-off lands, great care is taken with them. As a rule, they are raised from the egg through the services of a bantam hen as a foster mother, but this year excellent success has been reported from an experiment in raising Chukar partridges (an Indian species) by artificial incubation and brooding.



At the beginning of a turkey year, which is in the spring, between 4,000 and 5,000 breeding hens are placed in a row of pens ¾ mi. long. From 4,000 hens, about 200,000 eggs are anticipated, some of which are sold and the remainder sent to the incubators.

The incubator house is underground, with cement walls and floors, and has a capacity of 42,000 eggs every 24 days. The incubators are operated at exactly 99¼ deg. F., while the room temperature is thermostatically held at 70 deg. F. and the relative humidity at 60 per cent. This effective temperature was determined by experimentation and is maintained by a refrigeration unit, a humidity control, and several fans to which are attached heating elements. The fans can force air into the room at the rate of 1,500 cu. ft. per min., changing the air completely four times each hour.

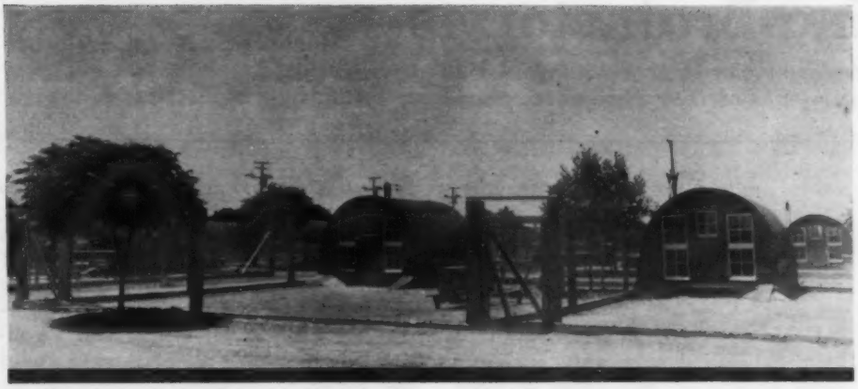
At the end of the twenty-fourth day, the eggs are taken from the incubators to the hatchers in a room adjoining, and the hatchers set at 99¾ deg. This increase of one-half a degree makes a big difference in mortality, the experiments proved, so the importance of accurate control can be seen.

On the thirtieth day, the hatch is taken off and the birds moved to specially-constructed brooder houses, each electrically-equipped with lights and heater. Those eggs not hatched by the thirtieth day are destroyed, because any birds which might hatch after this time probably would be of inferior quality.

In the brooder house, the floor temperature is set at 86 deg. and dropped at the rate of 1 deg. a day until the temperature is 75 deg. This is the procedure under normal conditions, but with adverse weather, slightly higher temperatures must be maintained and other precautions taken.

Of the eggs gathered at breeding time, 84 per cent are fertile and are considered fit for incubation. Of this 84 per

Interior of brooder house. The wooden floor is covered with sand for insulation and protection. The rounded construction makes for more even heat distribution. The brooder may be raised as the birds grow larger or as temperature conditions warrant



Exterior of brooder houses. There are 100 such houses and 20 of the conventional square type, each with a capacity of 400 birds

cent, about 75 per cent are hatched. And of those hatched, another 10 per cent are inferior or "cull" birds and are destroyed.

To the layman, this would appear to be a high mortality, but turkey men would be happy if they could be certain of the same consistently good results in first-class birds as the Boston Land Co.

And especially have the results been excellent when considered in the light of the location of the farm. The Boston Land Co.'s fowl business owes a good deal to electricity.

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Soil Heating and Light Produces New Seed Varieties

Speedier commercial production of new varieties of seeds has been made possible by the combined application of soil heating cable and incandescent lighting at the seed farm of the California Packing Corp. near San Jose. Growth of two to three crops a year in place of nature's single crop permits introduction of new varieties in one-half to one-third the time required without artificial stimulation.

Two greenhouses are electrically equipped, one with lighting and soil heating cable and the second with lighting and space heaters. For lighting 200-watt lamps in R.L.M. reflectors are so spaced as to illuminate 15 sq. ft. of bench. Thermostats maintain uniform temperature in the greenhouses and at night the lamps replace sunlight.

Ordinarily from five to ten years are required to develop new seed varieties, with planting, selecting and replanting. Two years of experience with this new electrical installation indicates that this time may be reduced by at least a half. So far, new varieties of peas have been under development.

Scene in California Packing Corp. greenhouses near San Jose, where electricity produces two to three crops of seeds a year

Action Draws Crowds to Pump Display

Below — Feature of the industrial section exhibit of the Los Angeles County Fair was the display of the Southern California Edison Co. in cooperation with various pump-manufacturers. Actual operation of the pumps attracted the crowds. A large central sump constructed of concrete with pump foundations around the edge permitted the working demonstrations. The foundations are standard so that at future dates any type pumping equipment may be exhibited by mounting it on a standard-sized wooden cover which fits over the foundation

Business Building Brainstorms + + +

[*What the Industry needs is a brainstorm to destroy the power surplus pest—Arthur Markwart, president, P.C.E.A.*]

Suggest Light Installed At Telephone Niche

44 In addition to the regular hall illumination in homes, apartments and flats, I would suggest the installation of a special light at the telephone niche. As a rule, halls are not brightly illuminated throughout, and it is necessary to carry the telephone directory away from the telephone to some more brightly illuminated place, in order to be able to read the fine print. A special light at the telephone location, controlled by a separate switch at this point, which consume additional electricity and also would tend to make telephoning easier, especially when numbers have to be looked up.

Also a good deal more electricity would be consumed if porch lights could be renewed with less difficulty. When these porch lamps burn out, either a ladder or scaffolding of some sort usually is required to remove the ceiling globe and renew the lamp.

An electric light company inspector might inquire of the housewife whether the porch light needs renewing and put in the new lamp for her, say, at cost, or possibly some small installation charge.—*C. A. G.*

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Soil Heating Equipment Needed for Home Growers

45 Standard soil heating equipment is admirably suited to the commercial grower. Cannot something be offered to the home grower that will be equally suitable to his use? Possibly if it were less expensive and smaller it would be some inducement for him to make use of it. Not many home flower or bulb growers require 60 ft. of soil warming cable nor will they go to the work and expense of constructing a complicated hotbed. The soil cable type of warmer lends itself to a very simple construction; while it may be built into a hotbed with ventilation and drainage, it may also be used without any special construction whatsoever. Merely scratch a trench a few inches deep among the flowers or around the shrubs, lay the cable in the trench, bury it and connect it up.

With some study and thought it might be found that much simpler and inexpensive equipment could be used. Is it necessary to use a thermostat switch costing two or three times that of the cable itself? Could not a length of cable greater than 60 ft. be used on 110 volts and thus with a lower wattage but constant current maintain the soil warm enough to promote plant growth?

Could a small inexpensive transformer be used to supply current to short lengths of the warming cable? Small lengths could be used in window flower boxes, in a small bed of bulbs, around a rose bush or similar places where but a few feet of warming cable are necessary.

Possibly a simple bare non-corroding soil wire could replace the lead-covered warming cable as now used. This would be entirely safe and feasible if shorter lengths were supplied with current at low voltage by regulating transformers. The transformers could be designed with poor voltage regulation for the particular purpose. Any hazard due to a short circuiting of the soil wires would thus be eliminated.

We might even consider the smallest unit to be awarded, the flower pot. Could it not be maintained at a uniform growing temperature by means of such small devices as a bell ringing transformer and a flash light globe? It is true that the flower pot load has no potentialities of being a large load builder but it would help to make the public electrically minded as well as fill up a multitude of service outlets that otherwise might be empty. This is but an idea in line with one already put into practical application by one of our largest electrical manufacturers in his electrically lighted flower stands.

When knowledge has been gained as to the adaptability and possibilities of the various kinds of equipment, public demonstration gardens could be arranged where the affect of soil warming in promoting plant growth could be shown. It might be possible to demonstrate that many normally dormant flowers could be stimulated to bloom during the cold winter months. If such were done there would no doubt be a potential field for more electric load in the many home gardens and window boxes. There are many rose, tulip, Transvaal daisy and other flower fanciers too numerous to mention who would be enthusiastic over the possibilities. These many features and possibilities could be studied and experimented with, and the successful experiments afterwards demonstrated in the show gardens. Such a garden would be a civic betterment, a good-will builder and a good advertisement. It would attract attention, for who would not take interest in something that would cause two flowers to bloom where but one bloomed before?—*L. C. E.*

Announcement

Prize winners for the current series of Business Building Brainstorms will be announced in the November issue. Because the judges for this series are officers of the Northwest Electric Light & Power Association, it was impossible to get the final returns before this issue went to press.

Many splendid ideas for building load have been suggested during the twelve months these ideas have been contributed by the industry. A new suggestion has been made that contributions be solicited on the subject of building goodwill. So the Business Building Brainstorms will be discontinued with this issue and an important announcement will be made next month concerning this new program.

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Usable Light or Usable Footcandles

46 A big advance in lighting has been brought about by the use of the sight-meter. However, we know that in heating or cooling, the registration of the thermometer alone does not tell the whole story. Humidity, air movement and air cleaning have to be taken into consideration. Similarly, glare, together with texture and color of surroundings must be considered in lighting.

There is danger of the customer fighting shy of advice in the future if he is allowed to install glary direct lighting fixtures when he should have semi or full indirect. Of if he installs proper indirect lighting fixtures and because of shining white walls still gets some glare, he is bound to be dissatisfied. In both cases some of the lighting is wasted and the sight meter registration is not enough to judge the installation by. From the figure registered must be subtracted the excess which enters the eye in amount sufficient to cause discomfort. The difference only is usable. Many direct lighting installations, while registering more footcandles than the same wattage in indi-

rect light actually supply less useful and usable light.

At the present time computing the amount of usable light is not an exact process but an approximation could be made in every installation to the greater satisfaction of the customer. This factor should not be overlooked in lighting sales work this fall and winter.—*C. H. E.*

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Floor Warmers for Markets Offer Profit Opportunities

47 In the Southwest the open air type of market in which the front is entirely open summer and winter, has almost superseded any other type. In cold weather the clerks suffer especially from cold feet. A strip of warm floor back of the counter or at the checking desk would be very acceptable. This could be accomplished by installing resistance cable in the concrete or in a low platform, and controlled either by a thermostat or by hand.

Radiant type heaters in one spot would also be good. Controlled by a pressure-operated switch in the floor they would be turned on only when actually in use, and could thus compete with gas. This is an opportunity largely overlooked but certainly worth a salesman's time this fall.—*V. E. L.*

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Electrified Auto Courts Will Sell Public

48 In casting about for a project for load development we find one enterprise which has much to offer, one that is at the height of its development and one that is making an effort to give the public the best there is to be had in comfort and convenience. This is the fast growing and well patronized enterprise of so-called Auto Courts.

There is here a huge demand for cooking, heating and water heating, which is now nearly entirely being satisfied by some other form of energy than electricity, while it fits in nicely with that group, for which there is available equipment, and to which our service is now a minimum.

There can be no doubt that a comprehensive study of this field would divulge a wealth of interesting and profitable information.

Competition is keen among these places which makes each and every one of them susceptible to any change which will make their particular place an outstanding one. The advertising possibilities of an all electrically equipped Auto Court would be a great sales point in our favor.

A vast majority of the people who visit these places are people who maintain a home, and who, except for their short annual vacation, are operating that home. Here they would have an opportunity to actually try out and prove to themselves the desirability of electric cooking and heating at no additional cost and with no feeling of obligation to any utility company or dealer.

This seems to present a wonderful proving ground or laboratory for the development of domestic use of electricity. There would surely be desires created which could be satisfied only by the installation of such equipment in some homes. Our domestic load would be increased indirectly and our commercial load would at the same time be directly increased, fulfilling the requirements mentioned previously of a doubly desirable and productive field for our load building activities.—*H. W. K.*

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All-Night Protection Light Would Build New Load

49 The value of light for protection is well recognized and is used in most places of business, but has been largely neglected in the home. It is felt that a well directed drive along this line would pay well, in that whatever load is developed would come mostly at off-peak hours and would be all "velvet".

In the average small home a single light mounted on the rear of the house would flood the back yard, and the front of the house is often adequately lighted from street lights. A more or less standard installation could be worked up that could be sold at a standard price—a bargain price if you please. It would consist of a reflector to take, say, a 100-watt lamp, conduit and fittings for surface mounting to lead to a switch on the back porch, and means for picking up power usually available on the back porch.

In the advertising, attention should also be directed to the value of a night light in the hall or other convenient place, on the front porch where not near a street light or trees and shrubbery make it dark, and a light left on when no one is at home.—*V. E. L.*

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Methods For Stimulating Additional Lighting Load

50 An intelligent and intensive cultivation of the important field of lighting should add greatly to load development and revenue. To stimulate the additional use of light to the extent of only two or three thin dimes a month for each of the millions of consumers would be productive of great things in the way of increased load and revenue. This should also, of course, result ultimately in increased customer comfort and satisfaction provided the best interests of the customer are always made paramount.

The average customer is not at all expert in matters of illumination. He must be directed into the pathway of better light. Why not provide him with a detailed, non-technical listing of the many ways in which light may be used to his advantage? Anything educational is good advertising.

In addition to a "fill the socket" idea some of the following suggestions of improvements and extensions might be in order:

A revival of exterior flood lighting.

Ordinary decorative lighting of buildings and grounds.

Encourage a continuation of the Christmas Season outdoor lighting in a more modest way throughout the year.

Offer prizes for seasonal decorative lighting.

Light up the back yard gardens with their fountains, fishponds and shrubs.

Foster the "Keep the Porch Light Burning" idea for the sake of accident prevention and burglar insurance.

Cite the great number of accidents that occur within the home, pointing out how many of these might have been avoided with the use of more and better lighting arrangements.

Suggest the hall lighting of apartment houses and public buildings to include the lighting of basement and rear yard dark spots for safety from prowlers, accident, etc.

Encourage the more general use of store and warehouse all-night lighting in discouraging of thieves, etc.

Special attention might be given to the all-night lighting of the grounds of suburban and rural homes and estates for the dual purpose of display and protection, in short, extend the street and highway lighting idea to private homes and grounds.

To put the ideas across the advertising might be sprinkled with some slogans such as:

"For safety's sake—keep the porch light burning."

"Protect Your home with Light."

"Protect your property from thieves and burglars with light."

"Clean Up; Paint Up; Light Up."

"Light up the dark corners."

"Beautify your home with light."

"Decorate your home with light."

"Flood light for beauty and profit."

"Welcome your customer with light."

"Protect your customer with light."

Lighting is the "high grade pay dirt" for the electric utilities and should be worked honestly, intelligently and continuously for greater profits and better public relations.—*R. V. P.*

Bill Jones Speaks + + +

about Lighting Demonstrations

"YOU KNOW," said Bill Jones, as he sat across the Manager's desk, "one day last week I came near coming in just to compliment you for some fine work you were doing——"

"Can it be possible?" retorted the Manager. "It must be the weather. The excessive humidity does unexpected things to the human organism."

"As I started to say, when you so rudely interrupted me", grunted Bill, "I came near to doing so—in a moment of weakness—but I didn't, and the temporary urge was easily suppressed."

"A compliment from anyone else, compared to approbation from you, would be 'but tinkling brass.' If it had been received I most certainly would treasure it and enshrine it in the archives of my memory."

"Uh, huh, in your 'Appreciation' file I suppose—that thin little folder which has two or three letters, which you have accumulated over a period of years, from customers who have written to tell you that one of your employees performed a much appreciated personal service to the writers at some time in the dim past. Anyway, the other evening Mrs. Jones opened the door to a couple of very personable young ladies. It seemed that they were from your company and were eager to improve the lighting in the Jones mansion. They told their story interestingly and well. I guess it was because they had an interesting and important story to tell. They talked about the desirability of preserving eyesight; gave some very convincing demonstrations, and incidentally related some facts that were rather amazing and which I believe were entirely true, although I hadn't known them before. Ma Jones got quite agitated when they recited the crime of improper lighting in the classroom, as well as in the home, and the serious results to the eyes of the kids, etc., but of course, you know the whole tale.

"Then one of the young ladies brought in a stand lamp and put it near Mrs. Jones' chair, connected it up and turned on the light. Ma was tickled to death; said she could sew as well as if it were daylight, something which she had not been able to do for years, and immediately began to chatter about a lot of night work she was going to plan, to make things for a flock of her grandchildren. Well, the stand lamp had to stay right there and I had to write a $19.00 check for your octopus right on the spot—$15.00 for the lamp for Ma and the rest for some new shades elsewhere and some different globes."

"Well," said the Manager, "what is wrong about all of that? Don't you think the improvement is worth it?"

"Yes," said Bill, "it is—and more. But you didn't do the job right. Of all the five senses the most precious one is sight. Improvement in the lighting of the home is a real social service—from a half dozen different angles. People know little of the facts which your emissaries are showing.. When they are dramatized, the home lover is startled and is likely to become enthusiastic. So when you picture these truths and these demonstrations, you are performing a worth-while service—one of the most important in your repertoire. But when you permitted your experts to sell that stand lamp and those shades to me and took my check for $19.00 the whole thing became merely a commercial transaction. The real worth of the service to me became obscured by the dollar motive."

"Well, what of it," interrupted the Manager. "That 'better-light, better-sight' is genuine. We can't afford to do that work without some compensation, and the profit we get on those lamps is slight enough. It costs money to send out those experts and to advertise."

"Yeah," said Bill, "that is all true. But after all, it doesn't cost much, and the little lessening of what expense there is, is but a trifle compared with the real service you are performing. Many a business has lost dollars trying to save pennies. Instead of building our businesses with an eye on the future, we sometimes seem to conduct them as though they were going to last but a few months. If your young people who put over the story of better illumination in the Jones home had stopped right there, it would have been a perfect situation. They should have refused to sell anything by the company. In fact, should have taken pains to disclaim any desire on the part of your concern to cash in on the whole matter. They should have even declined to sell bulbs to Mrs. Jones. Should have advised her as to just what sort to secure, told her what dealers could supply such a stand lamp as she bought and where she could purchase shades for some other of her lamps. In other words, the only thing of importance you had to offer was an idea, and you spoiled it by trying to help pay part of the cost of the exertion. Perform it as a pleasurable duty—a free contribution to the welfare of the people of your community. The most beneficial service which you can perform for your customers and for your company is one on which you can make no direct profit. BUT that extra 100 watts which went into that stand lamp will make money for you for many years to come, or until it is replaced by one which adds 200 watts. That is where you begin to reap the reward of service rendered."

"You know," said the Manager, "I often wonder how in the world you ever came into possession of twenty shares of stock in my company. You must have inherited them. You certainly didn't get it through any inherent business accumen. You ought to know that a public utility is regulated, that it must have profits to enable it to finance itself; that it cannot perform a service at less than cost; that one class of customer must not be penalized to the benefit of any other, that the law—"

"Oh yeah, I know. But why don't you just sing that to the Federal Trade Commission, the Federal Power Commission, the 'social security' boys and the other 'Abundant Lifers' who interpret the thunderous shouts of the populace questioning their sanity as being a 'whispering campaign.' I bought stock in your company not because of any confidence in your vision, but because I had faith in the continuing demand for the necessities your company has to offer, and I thought, and still think, you will remain prosperous, in spite of yourself. Over a period of years you have taught your customers to expect nothing from you for which they do not pay. Why not try disappointing them? After they get over a very natural suspicion they might like it. There is a great psychological truth behind the admonition to 'cast your bread upon the waters.' Also, it is long-range salesmanship. Apparently, unselfish service rendered pays gorgeous dividends in the end. Try it and my twenty shares of stock will become more and more valuable."

Cooperation on Parade + + +

[*Forecast of forthcoming cooperative merchandizing activities, and review of activities in progress or completed, a summary of cooperation at work throughout the West*]

Sales Executives Analyse Advertising

A UNIQUE meeting on advertising and sales promotion sponsored by the Edison General Electric Appliance Co. drew sales managers and advertising managers of Northwest utilities together in Portland, Ore., Sept. 13. J. C. Platt, Northwest district manager of the company, Seattle, acted as chairman, and W. A. Grove, general advertising manager, Chicago, told of the Hotpoint advertising plans for the fall and Christmas campaigns. Utility sales managers and advertising managers were heard in formal talks and in round table discussion on points raised.

Welcoming the delegates, Lewis A. McArthur, vice-president and general manager, Pacific Power & Light Co., Portland, cited pertinent facts bearing on the development of a 1,200 kw.-hr. average annual domestic use in his company. A study of 100 accounts representing various degrees of use of domestic power had indicated that in order to use 1,200 kw.-hr. a customer needed an average investment of $800 in converting devices. If this average annual use could be doubled there would be required an additional investment of $500 a customer in converting devices which would mean for the Pacific Company's 36,000 customers alone an expenditure of $18,000,000 for appliances. Mr. McArthur expressed the opinion that the doubling of the average annual use was within the realm of possibility within a period of years.

The difficulty of categorically classifying the market for ranges and water heaters according to buying ability was pointed out by F. E. Ross, assistant sales manager, Puget Sound Power & Light Co., Seattle, in his discussion of "Reaching the Secondary Market." There is a great mixture of buying ability in all groups and it is chiefly necessary in the case of the so-called secondary market to show how people can pay for equipment that they are already receptive to and that they all desire now more than ever, he said. As a result of an analysis along these lines, his company thinks it has found the answer in long term contracts with low monthly payments.

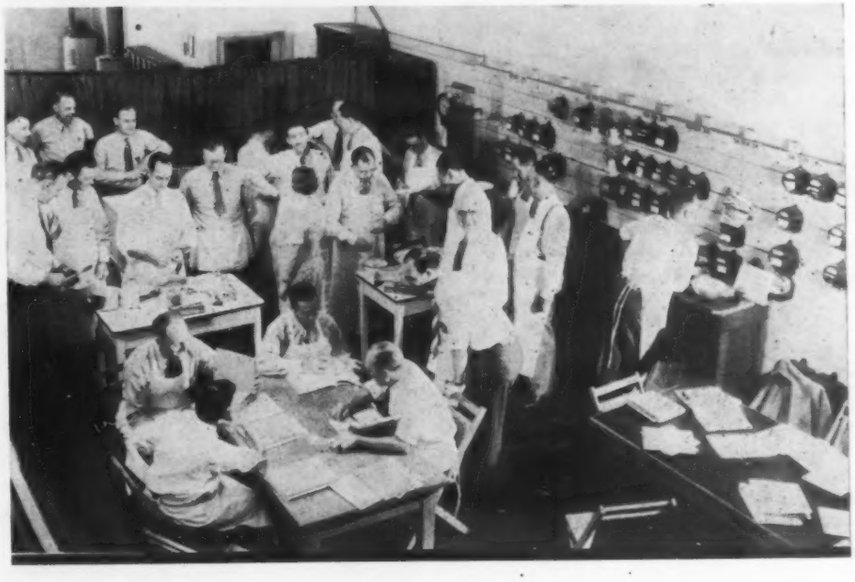
On the subject of coordinating advertising and sales work, Orr E. Crites, merchandise manager, Portland General Electric Co., Portland, pointed out that salesmen presenting their case by speech and demonstration direct to the prospect could make the appeal both through the eye and ear and could overcome objections raised during the sales presentation, whereas advertising could appeal only to the eye and couldn't answer objections. Therefore, the company's advertising money was spent largely on educational advertising that didn't need answers. It was designed to do three things: (1) make contacts for the salesmen, and for this the contest idea had proven effective; (2) educate the public on the service the appliance can do for them; (3) do a certain amount of product advertising showing the article, quoting the price and giving the reasons why they should buy now.

In his general remarks made in connection with the presentation of the Hotpoint sales and advertising helps for the fall season, W. A. Grove stated that newspaper advertising is intended to secure action now, and much of it should be devoted to product advertising telling what the company has to sell, where the public can buy it, and why the public should buy now. He cited a utility company in the middle West that had changed its advertising policy during the past year from educational to product advertising and found that previous fears of kick-backs from dealers and others were unfounded.

The afternoon session of the conference was devoted largely to a round table discussion by various advertising managers present under the chairmanship of James Lightbody, advertising manager, B. C. Electric Railway Co., Vancouver, B. C., and new chairman of the advertising committee of the Northwest Electric Light and Power Association. Vernon Churchill, Portland, handling Northwestern Electric Co. and Pacific Power & Light Co. merchandise advertising for McCann, Erickson Co., discussed product versus educational advertising, stating that it is not so

Salesman Learn to Cook Electrically

Salesmen of the San Joaquin Division of the Pacific Gas and Electric Co. were given a real course in practical electrical cookery by Miss Myrtle Turney, home economist of the Edison General Electric Appliance Co., Chicago. Here they are in the Tracy office of P. G. & E. hard at it. Salesmen in the San Francisco, East Bay and North Bay division received similar instruction in one-day classes. After Miss Turney returns from Honolulu, where she is putting on a cooking school, salesmen in other divisions will take the cooking course



much a question of using one or the other as it is a question of balancing the use of both in the year's program. Charles H. Devlin, handling Portland General Electric Co. advertising for Gerber, Crossley Co., Portland, discussed the efficacy of jingle or slogan contests for the public, pointing out the way in which such contests created contacts and prospects for the sales force.

The effect of FHA financing on appliance sales in the Spokane area was told by Raymond Kelly, handling The Washington Water Power Co. advertising for Severson & Kelly, Spokane. Effective promotion of Title I of the FHA among bankers in the territory had increased appliance sales 30 per cent over the previous year. The price of the appliance made relatively little difference. What the people were concerned in was how much a month it would take to buy it.

The effect of sales contests for employes on sales results was described by L. A. Williams, advertising manager, Puget Sound Power & Light Co., Seattle, whose company had always used the employe contest method in its campaigns, dramatizing them in such a way as to evoke the interest of the entire personnel. Besides being effective in selling, it was pointed out that these contests built employe morale. In a national survey of all campaigns in the country in 1935, 357 campaigns with a contest featured in connection with them made 110 per cent of quota, and 369 campaigns without such a feature made only 70 per cent of quota.

The advertising program that during the first eight months of this year helped to sell 2,100 ranges, 1,800 refrigerators, 500 water heaters among 46,000 customers of The California Oregon Power Co. and Mountain States Power Co. was outlined by H. D. Kem, advertising manager for those companies, Medford, Ore. This represented the sale of one major appliance for every ten customers, which was recognized as perhaps the outstanding sales record in the Northwest this year.

F. W. Linklater, advertising manager, Grays Harbor Railway & Light Co., Aberdeen, Wash., discussed the use of radio, principally spot announcements for launching campaigns and for stimulating the buy-now element in campaigns, particularly when the price and product offered was attractive. Not only his own company but electrical dealers offering ranges and refrigerators and other appliances in his territory have found the use of spot announcements on the radio remarkably effective in view of their low cost.

James Lightbody stated his company used practically no educational advertising in the promotion of range sales, believing that there is full public acceptance of this appliance in his company's territory. He recognized, however, a difference in advertising water heating on which he said educational work was needed to secure public acceptance of the automatic electric water heating idea. Generally he advocated newspapers for a campaign offer expecting an immediate return, and billboards for promotional ideas where the idea can be condensed into a dramatic picture with a few words of explanation.

A similar meeting of commercial and advertising managers in the Rocky Mountain District was held at the Hotel Utah in Salt Lake City, Sept. 23, with B. E. Rowley, district manager, Edison General Electric Appliance Co., presiding at the meeting. George M. Gadsby, president, P. M. Parry, vice-president and commercial manager, W. A. Huckins, sales manager, M. L. Cummings, Jr., director of advertising, all of the Utah Power & Light Co., L. W. Brainard, sales manager, Idaho Power Co., and a large group of commercial and advertising executives from utilities in Utah, Colorado, Idaho, Montana, Wyoming and South Dakota participated in the conference.

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Dealer School Brings Home Makers to Stove

A VALUABLE example of how the dealer may take advantage of the promotional and other services of the Electrical Appliance Society of Northern California was given in the school on Cold Cookery which was held by the Karnel Co., of San Rafael, electrical appliance dealers there. During the electric refrigeration campaign of the summer this dealer took full advantage of the services of the Society and had Miss Bertha Mae Hixson, educational director, stage a Cold Cookery Show in his store for three days and evenings in August. To stimulate attendance $75 in prizes was offered to visitors and prospects. The first prize was a $50 credit on a Frigidaire, second a $15 credit on a washing machine and third a $10 credit on a new all-wave radio set.

Arranged so that visitors could go from one model to the next and be shown operation and virtues of each appliance

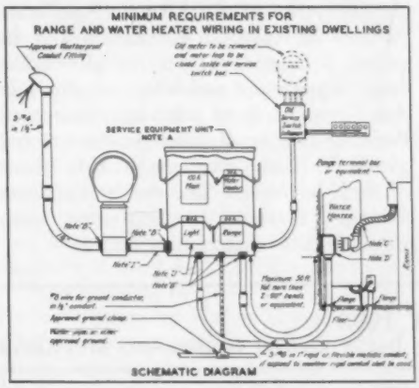
More than 200 people attended the school and a number of fine prospects were secured. Eighty-four inches of advertising in San Rafael newspapers and also ads in weeklies, together with 500 post card announcements, were used. On the floor six refrigerators were in actual operation in demonstrations. These ranged from the 3-ft. to the 15-ft. sizes.

The program of the school included teaching anyone who attended (1) "how to entertain the easy way," (2) "how to be a guest at your own party," (3) "how to make meal planning easier," (4) "how to save money with an electric refrigerator," (5) "how to obtain the most from an electric refrigerator," (6) "how to completely set a table for popular buffet parties" and (7) "how to make shortcuts in the work of homemaking." Miss Hixson was assisted by Viola Pape, and also by Grace Bushey, Pacific Gas and Electric Co. home representative of the North Bay area. Miss Bushey demonstrated the electric range. The Apex Co. also had a demonstrator of washers and ironers as did also the G.E. washer and ironer.

The work of the Society in thus helping individual dealers to stimulate their own sales is becoming recognized by more and more of the wide-awake dealers as offering real opportunities for bettering their own business.

Edison Supplies Switch Unit for Range Jobs

A new range and water heater wiring assembly, incorporating a "service equipment unit" provided by the company, has been issued by the Southern California Edison Co. for the contractors wiring ranges sold on its line for which a wiring allowance is made. The service equipment unit is designed for use either inside or outside already existing family dwellings. It consists of a single metal enclosure in which are mounted a 100-amp. main switch, a 60-amp. lighting switch, a 60-amp. range switch and a 30-amp. water heater switch. The specification also provides that the range wiring termination shall be in a plug receptacle rather



than an outlet box. In cases where local ordinances permit or where no local ordinances are in effect service entrance cable of the three-conductor armored type may be used.

The service entrance switch assembly is equipped with lugs to take care of the existing lighting circuit providing the distance between the existing switch and the unit is not more than 5 ft. Use of this assembly is now made on a new plan announced last month in which a range wiring allowance is $25 including the furnishing of this service unit by the company.

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Stages Its Own Show Annually

AN annual event in Riverside, Calif., is the electric Appliance Exposition of Franzens Hardware Co. This is usually held for about a 10-day period in the spring. A nearby vacant store is taken and devoted entirely to the exhibits. Large newspaper space advertises the event and a good attendance all through the exposition brings many customers for the purchase of all types of appliances.

Demonstration is made the basis of the exposition. Robert Westbrook, Jr., manager of the store, reports excellent sales from this annual feature. Not only are vacuum cleaners, small appliances, refrigerators and washers demonstrated but a section devoted to home workshop with tools, lathes, etc., are also being demonstrated all during the show. The candid camera photographs accompanying show, at the top, a demonstration of vacuum cleaners in which the woman is urged to try the cleaner on rugs and to get the feel of doing the job herself. Below this is a picture of a very interesting audience watching the preparation of food with an electric mixing machine. Next to the bottom is another view of visitors to the store looking at the items on display along the long tables. Also shown are the refrigerators along one side and the display board at the rear of the store featuring lamps and other small wares. The bottom picture shows the stove and heater display. Under the balcony, too dark to show, was the tool shop exhibit. Franzens Hardware Co. maintains a field sales crew working out of its furniture department. Cooking schools and other promotional events are held continuously.

Fry-Kettle Campaign Sells Many to Restaurants

A FRY-KETTLE campaign among restaurants in southern California, in which the employees of the Southern California Edison Co. all are enlisted to dig up prospects, is in full swing in the territory of that company and is bringing remarkable results. The campaign is being conducted in conjunction with the Edison General Electric Appliance Co. and features its new fry-kettle, selling with a $10 down payment. Employees were circulated with a pamphlet offering them $2 each for prospects resulting in a sale from appointments they could make for demonstrations of the fry-kettle in restaurants. "Every time you eat out, just ask the manager for his permission to have a demonstration

Compact and easily used, the fry-kettles have proved a popular seller to restaurants and eating houses

of this new fry-kettle at his convenience." Five coupons were affixed to the pamphlet to be used by the employee.

In addition to this a broadside and return card were sent to a mailing list of 3,000. This was followed by mailings of a blown-up letter signed by a salesman. Because of its size this letter was bound to attract attention. The letter stated that in a day or two the salesman was to come in and give an actual demonstration, with no obligation to the restaurant owner.

The many advantages offered to a restaurant owner by one of these automatic-controlled electric fry-kettles which operates at a very reasonable cost, saving a great deal in food spoilage and produces such tasty foods is resulting in a considerable demand for these appliances.

Appliances Dominate Vancouver Exhibition

ELECTRICAL appliances occupied more space than any other type of product displayed at the Willows Exhibition in Victoria, B. C., during September.

In the manufacturers' building, the British Columbia Electrical Railway Co. had an extensive exhibit, with five different departments. One section was devoted to Royal vacuum cleaners, royal polishers, and the royal Culinaire. Stoves and ranges occupied another section, while a third was devoted to washers. Here Thor, A.B.C., and La Salle washers and Thor ironers were demonstrated, as were General Electric and Philco radios and General Electric refrigerators.

The Hudson's Bay Co. exhibited Dictator all-wave radios, Locomotive washers, Locomotive ironers, and the Hoover vacuum cleaner in its section, while Premier vacuum cleaners were demonstrated by David Spencer Ltd.

Jameson's Electrical, Ltd., had a well-lighted and striking booth featuring General Electric products. A specially installed electric kitchen was a feature of this display. Radios, refrigerators, washers, dish washers, ventilating fan and mixer were all displayed, and a "Triumph" range was in the kitchen.

In the industrial building the Singer Sewing Machine Co., Inc., had a complete display of sewing machines, including the featherweight machine, fully electric.

Kent's, in a long panel, had a splendid exhibit which included the Westinghouse dual automatic refrigerator, the 1936 Philco and Victor-Globe Trotter radios, the Easy washer, and Airway vacuum cleaner.

The All-British Phillips air purifier, radios and refrigerators, with the No-Rub washer, were featured in a booth sponsored by Jim Bryant.

The Beatty Washer Store demonstrated products of its company in its booth. The new Beatty ironer, Beatty vacuum cleaner, 1936 Beatty polisher, and Beatty washer were all given attention.

McLennan, McFeely & Prior featured Frigidaire, Westinghouse washers, electric appliances, vacuum cleaners and radios, with parlor and bridge lamps.

• DARWIN CURTIS, recently elected president of Curtis Lighting, Inc., has announced that the Curtis Award for outstanding achievement by a utility company in the field of commercial lighting, has been reinstated by the Edison Electric Institute for competition closing April 1, 1936. The award carries a cash prize of $250.

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• A BANK in Spokane is advertising the financing of refrigerators under the FHA plan. Spokane and Eastern Trust Co. calls attention to the many high-grade refrigerators on sale among Spokane dealers and advises readers to buy now under the financing plan.

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• NOTEWORTHY is the fact that since the inception of the Electric Appliance Society of Northern California and its active promotional activity all of the large department and furniture stores in San Francisco have materially increased their electric appliance departments and given far more attention to this phase of their business. The results has been a large increase in appliance sales through these differential outlets.

DEALER SALES REPORTS—JULY-AUGUST 1935

A Summary of the Dealer Reports Compiled by Associations, Societies, or Bureaus, or Dealer Contact Departments of Utilities

APPLIANCE	P. G. & E. Co.[1]		San Diego Cons. G. & E. Co.[2]		San Joaquin Lt. & P. Corp.[3]		So. Calif. Edison Co., Ltd.[4]		Utah Power & Lt. Co.[5]		Wash. Water Power Co.[6]		Idaho Power Co.[7]	
	*July 1935	8 Mos. Dec.-July	August 1935	Year to date	August 1935	Year to date	August 1935	Year to date	August 1935	Year to date	August 1935	Year to date	August 1935	Year to date
Ranges	383	2,017	46	210	100	1,145	441	3,763	153	1,357	52	.....	164	1,999
Water Heaters	283	1,586	43	296	58	502	198	2,049	65	340	7	.....	.....	4,566
Air Heaters—aux.	82	3,326	18	543	.....	52	15	624	464	1,896	21	.....	13	97
Air Heaters, 220	54	478	.....	.....	20	380	.....	.....	.....	.....	.....	.....	.....	.....
Refrigerators	5,067	26,722	1,124	4,379	304	5,261	4,364	26,406	668	340	357	.....	363	4,941
Dishwashers	11	64	.....	.....	2	15	.....	.....	.....	2	.....	.....	.....	2
Washers	2,554	18,091	397	2,160	308	2,502	2,467	18,790	725	5.988	394	.....	317	2,986
Ironers	754	5,372	79	380	57	450	471	2,980	36	287	64	.....	49	292
Vac. Cleaners	1,508	14,049	188	1,056	66	609	848	6,701	401	3,337	158	.....	27	601
Radios	5,011	42,556	779	6,025	303	4,053	3,093	28,702	761	5,626	626	.....	151	2,070
Mixers	580	3,210	63	452	43	585	429	2,788	.....	.....	125	.....	24	384
Cookers, Casseroles	.....	.....	36	178	14	138	44	348	8	129	262	.....	6	47
Irons	.....	.....	344	2,066	353	2,561	1,405	10,100	82	309	527	.....	279	2,496
Waffle Irons	.....	.....	131	997	82	771	374	2,990	252	1,717	217	.....	46	620
Toasters	.....	.....	149	1,374	127	918	573	4,339	1,124	5,983	462	.....	60	925
Table Stoves, etc.	.....	.....	50	361	128	928	309	2,046	314	1,721	.....	.....	96	1,428
Heating Pads	.....	.....	41	439	.....	.....	63	1,233	790	1,900	73	.....	8	174
Curling Irons	.....	.....	.....	.....	.....	.....	39	474	104	807	.....	.....	.....	.....
Coffee Makers	.....	.....	157	963	82	726	360	2,663	1,378	8,009	355	.....	45	865
Sewing Machines	929	8,933	19	143	.....	.....	.....	.....	93	93	68	.....	.....	.....
Clocks	.....	.....	.....	.....	68	668	344	2,764	361	1,589	235	.....	9	192
Fans	.....	.....	.....	.....	.....	.....	744	2,562	139	404	205	.....	95	842
Floor Polishers	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sun Lamps	.....	.....	.....	.....	.....	15	13	215	2	47	.....	.....	1	119
Reflector Lamps	.....	.....	.....	.....	64	612	.....	.....	478	5,532	41	.....	37	1,058
Misc. Lamps	.....	.....	.....	.....	.....	.....	.....	.....	888	6,288	934	.....	201	3,390
Yard Lights	.....	.....	.....	.....	41	388	.....	.....	.....	.....	.....	.....	.....	.....
Misc. Small Appl.	.....	.....	167	1,715	217	1,578	479	3,499	2	113	.....	.....	.....	.....
Total Dealers	.....	1,400	.....	.....	.....	.....	588	588	.....	.....	.....	.....	.....	.....
No. Reporting	.....	.....	.....	.....	98	105†	464	505†	.....	.....	.....	.....	.....	.....

* August Report was not available at time of going to press. † Arithmetical average number of dealers reporting since first of the year.

[1] P. G. and E. reports obtained only on major appliances upon which accurate reports are available from dealers' accounts. Ranges, water heaters, and air heaters include company and dealer sales. Total dealers include gas as well as electric dealers. First report of year 1935 starts with Dec., 1934, and will be cumulative from that month.

[2] Gathered by Bureau of Radio and Electric Appliances of San Diego County. Clocks, fans included under miscellaneous.

[3] Includes dealer reports from Midland Counties Public Service Corp. territory also. Compiled by Valley Electrical Supply Co.

[4] Includes reports from dealers on San Joaquin Valley system of the company as well as Southern California areas served. Comparative figures of same month last year indicates improvement.

[5] Includes Utah Power & Light Co. territory in Utah, Idaho and Wyoming. Also Western Colorado Power Co. territory. Dollar value of appliance sales in June, 1935, is over 300,000 ahead of sales in June, 1934.

[6] Dealer sales only for Spokane and company's territory. Company sales not included. Table stoves, grills included with cookers.

[7] Figures compiled by Electrical Equipment Sales Association.

With the Trade Associations + + +

[An Exchange of Plans and Ideas for Assisting the Industry in All Branches to Solve Some of Its Problems of Trade Relations and Business Ethics]

State Inspection Laws Discussed By Inspectors

A VARIETY of subjects bearing on safe installation of electrical equipment and electrical inspection practice occupied the 100 delegates and visitors to the ninth annual convention of the Northwestern Section, International Association of Electrical Inspectors, Seattle, Wash., September 3-5. This being an off year in the biennial revision of the National Electrical Code, few changes in code articles were recommended. In lieu thereof the convention listened to reports on state inspection laws recently passed by state legislatures in the territory, and an exposition of the proposed new arrangement of the Code by Victor H. Tousley, secretary of the I.A.E.I.; a discussion of the legal aspects of codes in relation to the constitution by Walter L. Baumbartner assistant corporation counsel of the city of Seattle; plans for publicizing the value of electrical inspection to the public and a number of other subjects of local and national interest to the inspection fraternity.

New laws expanding and strengthening state inspection had been passed in Oregon and Washington, and these were explained respectively by George Pettingell, chief electrical inspector, Bureau of Labor for Oregon, and Jay Olinger, supervisor of safety, Department of Labor and Industry, for Washington. Both laws made the National Electrical Code the effective standard by reference, though the Washington law adds also the National Safety Code and "other safety regulations approved by the American Standards Association." The Oregon law incorporates a measure of sales control through provision for registration and licensing of dealers and directs that "electrical products offered for sale must be approved." Both states license contractors though with varying fees, and in addition the state of Washington requires contractors to be bonded. The electrical industry in both states has been behind the passage of these laws and, while recognizing imperfections, acclaims them as progress in the right direction. To round out this symposium on state legislation, W. E. Leppard, electrical inspector, Vancouver, B. C., explained the processes of Provincial inspection in British Columbia.

The constitutionality of some phases of the Washington law was questioned by Mr. Baumgartner in a technical discussion of the legal aspects of the law in the light of recent court decisions in other states relating to codes.

"Adequacy," an old yet always interesting subject of discussion at Northwestern conventions, again had its innings following a paper by A. L. Abbott, N.E.M.A., telling of the initiation of the adequacy movement in North Carolina by M. E. Cannady, electrical engineer and inspector for the insurance department of that state. The paper was read by L. W. Going, chief electrical inspector of Portland, Ore., long an advocate of writing as much adequacy as possible into the municipal code of his city. The paper told the methods of promoting the movement among industry groups and engineers, builders, architects, building owners and the public in general, through the use of the "Manual of Adequate Wiring" compiled by Mr. Abbott and first published in January of this year. In the discussion that followed, it was brought out that the inspector, holding a non-commercial position in the industry, was in a favored position to promote such a movement with the public.

A. R. Small, president of Underwriters Laboratories and chairman of the code making Electrical Committee.

Considerable enthusiasm among the delegates was aroused by the discussion of publicity following a report of the publicity committee by F. D. Weber, secretary of the Northwestern Section, and a discussion of the national publicity carried on by the public relations committee of the international association, by James A. Smith, Electric Cord Manufacturers, N.E.M.A. Discussion brought out the great good that would come from adequate publicizing of inspection activities, and a special committee on publicity and education for the Northwestern Section was appointed, with O. M. Thurber, General Insurance Co. of America, Seattle, as chairman.

Progress on the apparently colossal task of re-arranging the National Electric Code in accordance with instructions of the Electrical Committee at its last meeting, and in line with the suggestion of the utility group, was reported by Mr. Tousley, chairman of the subcommittee that is doing the actual work of re-writing the Code. He reported that there would be no change in the fundamental requirements of the Code but only in the arrangement of the material for clarification and to strengthen it legally. The re-written code will be ready to present to the Electrical Committee next March.

An inspirational talk on the humanitarian and economic value of better lighting was contributed by George M. Boyd, lighting division representative, Westinghouse Electric & Manufacturing Co., Seattle. Mr. Boyd brought vividly before the inspectors the part they could play in bettering lighting conditions in stores, factories and homes for the benefit of the public they served.

An explanation of the operation of the Southern California chapter of the Southwestern Section, I.A.E.I., by Herbert G. Ufer, Underwriters Laboratories, Los Angeles, inspired considerable discussion of the feasibility of establishing chapters in the Northwest, and resulted in the passage of a resolution recommending the establishment of chapters in Seattle and Portland.

A report offered at last year's convention on standard inspection forms was presented again this year with some additions as the report of a special committee of the international association, chairmanned by A. M. McLean of the city inspection department of Portland, Ore. This report is being presented for consideration at the various Section conventions this year, of which the Northwestern is the first.

The meeting was held in the Olympic Hotel, with M. P. Hotelling, city electrical inspector, Seattle, president, Northwestern Section, in the chair. At the opening session addresses were heard from Mr. Hotelling, Mayor Charles L. Smith, Seattle, Sam G. Hepler, electrical contractor, Seattle, and Arthur G. Hall of Toronto, Canada, president of the I.A.E.I. During the sessions the convention was addressed by A. R. Small, president, Underwriters Laboratories, Inc., and chairman of the Electrical Committee, and R. Bourke Corcoran, director of Uniform Legislative Department, N.E.M.A.

The Code Breakfast, presided over by J. L. Pegram, Department of Labor and Industry of the state of Washington, brought out many interesting experiences of inspectors in the earlier days of electrical inspection. George I. Drennan, Pacific Power & Light Co., won the prize for the most thrilling experience, which was good enough to make the front page of the Seattle P.-I.

The following officers were re-elected: President, M. P. Hotelling, Seattle; vice-president, E. G. S. Pryor, Underwriters Laboratories, Seattle; secretary-treasurer, F. D. Weber, Portland. As second vice-president, a new office created by the amended by-laws, the convention elected E. B. Morrison, Oregon Insurance Rating Bureau, Portland. New members of the Executive Committee were elected to fill expired terms as follows: George Pettingell, Portland, and Orville A. Alderman, Seattle. L. W. Going was re-elected to the Executive Council. Under the new by-laws, J. F. Julian, Wenatchee, Wash., the immediate past president, automatically becomes a member of the Executive Committee.

Inspection trips to the electric boilers of the Puget Sound Power & Light Co. terminals of the Port of Seattle, the Trumbull Electric Manufacturing Co. plant, and other points of interest in Seattle were scheduled. Golf had its place on the program of entertainment, and N. L. Bost, National Electric Products Co., Seattle, took away the first prize and the Inspectors' Cup. The annual banquet was held on the last night, and an over-night trip to the Skagit development of the city of Seattle was offered to the delegates on the day preceding the convention.

San Diego Inspectors Convention Combines Fair and Meetings

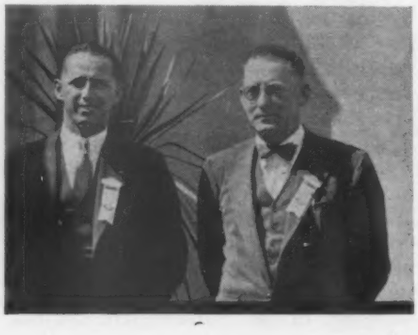
PERFECT combination of exposition and of business sessions gave the annual convention of the Southwestern Section, International Association of Electrical Inspectors a novelty and a balance that shall be hard to match in subsequent meetings. San Diego was host to the meeting, Sept. 11, 12 and 13, and gracious, thoughtful host it proved indeed. The meetings were short, well organized and conducted, and the entertainment, featuring visits to the California Pacific International Exposition, was arranged so that those attending had a maximum opportunity to visit the fair and its exhibits.

President Arthur C. Veit, county electrical inspector, Los Angeles county, set the pace with a brief address of thanks to his committees and members, after greetings of the city had been extended the convention by Councilman Walter Wurfel, formerly an electrical wholesaler of San Diego. George Kimball, electrical engineer, Industrial Accident Commission, reported for Secretary-Treasurer Claude W. Mitchell, whose illness prevented his attendance but who was reported on the way to recovery. Mr. Kimball also reported investigations of electrical fires and accidents, after which discussion brought out the need for better cooperation from fire chiefs to ascertain true causes of such reported fires.

R. W. E. Moore, chief electrical engineer, National Electrical Products Co., Pittsburgh, was given an opportunity to describe the new non-tamperable fuse developments and also the "plug-in strip" for installation in existing buildings. He described these as materials designed to solve two of the chief problems found after wiring is installed, namely bridged fuses and lamp cord extensions. Classified as a surface raceway, five feet of the strip is considered one outlet, thus allowing 60 ft. to a circuit.

Victor H. Tousley, secretary A.I.E.I., Chicago, explained several of the changes to be found in the 1935 edition of the National Electrical Code.

Presidents, past and elect; Art Veit (left), and Tom Coyle, whose term began at the convention.



The San Diego Electric Club turned over its luncheon to the inspectors, with A. E. Johnstone, San Diego city electrician and convention chairman presiding. Several of the prominent members attending the convention gave brief talks, the feature of which was a good natured banter between R. H. Manahan and Ralph Wiley, chiefs respectively, of Los Angeles and San Francisco electrical divisions.

W. H. Evans, supervisor of F.H.A., Los Angeles, opened the Tuesday afternoon session with a spirited talk on the building activity being stimulated by the Housing Act loans. The mortgage, he declared, had become "Public Enemy No. 1" instead of a blessing, and explained how the amortizing features of the F.H.A. loans were restoring desire to own homes and improve property.

A. E. Johnstone described some of his inspection problems in connection with the San Diego exposition. Electrically the installation is far above average for fairs, he demonstrated, because experience with San Diego's former exposition in 1915-16 had taught it that a permanent installation must be made. He described the installation and wiring methods, told of the effect of a licensing ordinance on the furnishing of men to complete the job on time, and other interesting features of lighting and installation.

Gracious hosts to the convention: Bill Talbott, of the utility (left), and Bert Johnstone, San Diego city electrician.

In introducing James A. Smith, representing the Cord Manufacturers and also the I.A.E.I. publicity committee, H. V. Dobson made the tart remark that schools taught boys just enough about electricity to make them dangerous. Mr. Smith described in detail how an inspector can improve his position with the public by educating and informing the public as to the need for inspection, good materials, and competent installation.

Arthur G. Hall, of the Hydro-Electric Commission of Ontario, and president

of the I.A.E.I., spoke of Canada's national code and warned against vague, generalized codes that are found hard to adhere to in practical experience. He also stressed strongly the need for inspectors to resist the pressure from commercial groups to reduce the code or alter it to suit their own interests. He also advised state legislation similar to Canadian provincial legislation to bring installations in rural areas up to minimum standards and thereby strengthen city inspection. Codes, he said Canada had found, should also include standards for materials as well as installation.

A dinner dance, at which a delightful entertainment program was provided by a manufacturers', wholesalers' and utility committee headed by W. H. Talbott, closed the first day of the convention.

R. Bourke Corcoran, director, uniform legislation department, National Electrical Manufacturers Assn., opened the Wednesday morning session after a breakfast code discussion. He detailed the manufacturers' concern over legislation which imposes uneconomic and widely varying conditions of manufacture in various localities, declaring that N.E.M.A. never opposed legislation that was soundly based. The present Electrical Committee set-up for writing and revising the National Electrical Code, he said, was the best system yet devised for bringing together all of the interests and needs in code making. N.E.M.A., he declared, is launching a business development program destined to benefit the entire industry.

Arthur Abbott's paper, described more fully in the report of the Northwestern section, was read, in his absence, by W. A. Cyr, *Electrical West*. A. Penn Denton, representing the wire and conduit manufacturers, described the improved standards set up voluntarily by the conduit manufacturers, and the tests and standards for Safecote fire resistive wire now required by the code. Discussion followed on the desirability of identifying coloring for larger sized wires than now so processed.

A. R. Small, president of Underwriters Laboratories Inc., Chicago, and chairman of the Electrical Committee, was introduced and spoke briefly. On the subject of bare neutral, which he discussed, he said the real problem was one of difference of potential between the real ground and the intended ground.

Harold Gerber, electrical inspector, San Francisco, read a paper on inspectors problems, much of which will be reproduced in these columns later. He touched chiefly on the confusion caused by differences in standard between Underwriters Laboratories and those required in the code.

H. C. Rice, merchandise manager, Southern California Edison Co., Ltd., Los Angeles, closed the Wednesday session with a paper, "Streamlining the Rule Book," which provoked more controversy than any other. His text was the need to simplify wiring rules to bare fundamentals, which he compared to the Ten Commandments, the Constitution, and other basic documents. He pleaded "Why not get our heads together and find some way of installing a range without the services of a wrecking crew?"

Wednesday afternoon and evening were spent at the fair grounds, with a dinner party at the Cafe of the World as the center of the evening entertainment.

Thursday morning's session opened with a description by Mr. Tousley of the work being undertaken to rewrite and rearrange the code, an effort prompted by the utility group last year but now in the hands of a special committee. Mr. Small also cited some editorial inconsistencies in the past arrangement. Mr. Tousley commented on Mr. Rice's paper by holding that, upon reflection, he believed the National Electrical Code better observed than the Ten Commandments.

Ralph Wiley told of two and a half years experience with a sales control ordinance. He condemned local laboratories as subject to the whims or pet theories of any inspector who might be in charge. He also advised against fees or licenses to dealers, feeling that the city owed its citizens that much protection and should pay for it. Considerable discussion on sales control ordinances ensued. Mr. Manahan declared that local laboratories were unable to provide the periodical regular inspection at the factory which the Underwriters do.

T. C. Coyle, Fresno city electrical inspector, was elected president; H. V. Dobson, Santa Barbara city electrician, first vice-president; Ed McLaughlin, Richmond city electrician, second vice-president; Claude Mitchell, secretary-treasurer; George Kimball acting for the latter until he returns to duty; in the election of officers which followed. The executive committee elected consists of Past President Arthur Veit; Harry Beecher, chief inspector, Los Angeles; Carl Heise, Westinghouse Electric & Manufacturing Co., San Francisco; E. J. Crawford, San Joaquin Light & Power Corp., Fresno. George Kimball and Claude Mitchell were re-elected members of the executive council of the I.A.E.I. Fresno was selected as the next convention city in 1936. An invitation brought by H. J. Ufer, to join the Northwestern Section at its convention in Salt Lake in 1937 was placed in the hands of a committee. The meeting ended with extended discussion of inspectors problems under the direction of R. H. Manahan.

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Back To Nature

"Since the Supreme Court has decided that the framers of the Constitution failed to anticipate the complex problems of our modern economic life and has declared that hereafter we shall be rugged barbarians, we, the electrical contractors of San Bernardino valley, wishing to be '100 per cent Americans' and recognizing that cooperation is incompatible with rugged individualism, decided to liquidate our un-American organization and offer our services for whatever the traffic will bear."

GEORGE BLACK,
Ex-Field Secretary of the Valley Electrical Contractors Assn.

Los Angeles Contractors Reorganize Operations

Reorganization of the Los Angeles branch, Southern California Chapter of the National Electrical Contractors Assn., was effected as reported briefly in our last issue, by the board of directors of the Los Angeles contracting group. Action was taken after a meeting called subsequent to a ballot of members. A new program was outlined for the association. A. S. Stone, Stone Electric Supply Co., Los Angeles, president, announced that J. J. Newett, for the past eight years connected with the Doran Electric Co., Los Angeles, had been engaged as secretary and manager and new headquarters had been set up at room 235, Wilson Building, 132 West First St., across the street from the Los Angeles city hall. The location is considered advantageous since contractors make almost daily contacts with the city hall electrical department and find this location convenient to attend to association affairs also.

The Los Angeles branch was formerly operated by the Biddle Trade Bureau, which will continue to act as secretary for the Southern California Chapter. Services of the Biddle Trade Bureau, according to Mr. Stone, will still be retained for legal and other needs from time to time.

Board of directors of the Los Angeles group, besides Mr. Stone, includes Herbert Evans, George deAath, Max Frye, Fred Elbrick, James English and Charles Taylor.

EDITORIAL + + +

Electricity—A Raw Material

THERE is a large group of well-informed engineers who believe that the most economical transmission line is a gondola full of coal; that is the idea that electricity, a great industrial commodity, is transported more easily and cheaply as latent energy in an inert state. Whether or not this concept applies in hydro-electric regions is of small matter, but it does serve to focus attention on the fact that electricity is a basic raw material of our industrial life. The electrical utilities, the manufacturers and purveyors of this commodity, should consider it as such, and should be sure that the industrial customer considers it as such.

The average industrial plant fabricates a product for public consumption from a wide variety of materials. The completed product represents a fusion of these materials plus craftsmanship, plus energy. Of the cost of the average finished product, electrical energy represents perhaps two or three per cent. The energy that goes into its fabrication is as much a part of the product as the steel, rubber, glass or other tangible materials used. Generally speaking, however, plant energy costs are lumped into the operating overhead which is applied to the labor and material costs per unit of output to obtain a final selling cost. Instead of appearing as a cost of a few mills or a few cents per unit, electrical energy shows up on the manager's report as a lump sum figure which is immediately subject to scrutiny for possible methods of reducing it. Thus the way is paved for an isolated plant. With such a philosophy, it is just as logical to build a paint manufacturing unit to supply paint for the finished product of the plant or to build a steel plant as an adjunct because the aggregate steel bills represent a large figure.

The prevalence of the conception of electricity costs as overhead rather than raw material for a finished product very probably is due to the industry's power merchandising methods. If the industry does not consider it or sell it on that basis, there is little likelihood that the consumer will consider it as such. Yet the selling of electricity as a raw material is subject to the same laws of sound merchandising as other materials. The steel manufacturer's representative goes into the industrial plant and shows where his new alloy will reduce the weight of the product and thus save two mills per unit of freight charges. He is hailed as a messiah. Why cannot the power salesman go in and show where his raw material can be adapted through the use of more efficient equipment, new applications of heating or welding, or power factor corrective equipment to also reduce the unit cost? Would he not also win the plaudits of the management? Perhaps a review of selling fundamentals is indicated.

False Economy

ONE of the unhealthy practices born of the depression was the increasing tendency of some utility companies to engage in the manufacture of standard items of equipment or small replacement parts. At the moment the practice may have seemed logical; engineers not otherwise occupied could make the designs; maintenance shops and organizations with curtailed operations could engage in light manufacture; men otherwise scheduled to be let out could be given work; there seemed to be apparent savings. Not matter how expeditious this practice may have seemed at the time, it can find little economic justification today. Operations are reaching the 1929-30 peaks. Engineers are again busy. Men are being added to staffs.

Entirely apart from these considerations, equipment manufacture is not a part of the utility's job. The electrical manufacturers have demonstrated their ability to produce what the utilities need at prices which are reasonable. They have contributed vitally to the improvement of the art of generating, transmitting, and distributing electricity. They have engaged in research so that this art might be further improved. And finally they have stood shoulder to shoulder with the power companies in many battles where the primary interest was not theirs but the utilities'.

Competition of this character does not foster goodwill. And goodwill is a precious asset that only can be earned.

Range Records

ELECTRIC ranges sales, 64 per cent ahead of last year for the first six months, may top the 1934 figures by 75 per cent. What factors have contributed to this wave of popularity and how long may the industry expect it to continue? The answer to the first question involves a variety of causes; the second depends upon what the industry intends to do to maintain popular interest.

Rate revisions whereby some 80 per cent of the

twenty odd million domestic customers now have cooking rates available (the percentage is even higher here in the West); home modernization with emphasis on the electric kitchen; a wave of national publicity in women's magazines; the dire necessity for stimulation of the domestic business by utilities; the recognition that the soundest method of decreasing rates is by increasing use; efforts of the manufacturers to improve both the performance and appearance of electric ranges; and increasing interest in all electric appliance retailers in the possibilities of profits from range sales—all these are factors which are building range sales to new heights. And, finally, whether the industry appreciates the reason or not, the continual publicity which electricity and its comforts and conveniences has received from the present administration has had no small part in arousing popular interest in electric ranges and all other appliances.

What about sustaining this interest, capitalizing on it in the future, assuring greater growth and greater profits? The experience and technique of one of the major range manufacturers who has long carried a heavy share of electric cookery promotion furnishes a key to fields to be cultivated. So far this year letters and questionnaires have been directed to 6,800 schools, colleges and universities covering the subject of electric cooking as a part of domestic science courses. Almost 4,000 replies were received. Work can be done with the schools, for they are training a new generation of housewives. Similarly letters were sent to approximately 1,400 county home demonstration agents with 1,100 replies requesting material for use with meetings of rural housewives. Home economists on 1,380 newspapers are using a syndicated electric cookery column. Steps like these, plus intensified local and national sales promotion and merchandising will continue to build the electric range market.

After all the kitchen is the industry's big potential market. Electric cookery reduces labor, preserves flavor, is clean, cool, dependable, safe and convenient; it is modern. And its extension to more homes means additional profits for every branch of the industry.

Community Selling

AS THE time approaches for initial production of power from two great government projects, Boulder Dam and Bonneville, the need for a new technique in power sales becomes more pressing. Natural growth of the present markets will absorb some of this power, but there will remain large blocks which will represent an economic waste unless beneficial uses are developed. And these uses must be industrial in character.

Selling new industries is undeniably a community job, requiring the full cooperation of all business elements and the best efforts of other good citizens than the utility companies alone. Because their stake is the greatest, the utilities naturally must assume the leadership, but the communities themselves will only benefit in direct proportion to the combined sales effort that is exerted to bring new industries into the West.

Facts, figures and sales arguments are being gathered. Basic studies of raw materials and other industrial advantages are being made. By the time the power is ready for market there will be fat files which should form the basis for a planned sales effort. An aggressive community selling campaign with a force of trained sales engineers will be required to interest new industries in the economic use of this new power supply.

The Manual—A Sales Tool

A SPECIAL feature of this number is an Appliance Sales Guide, which will be found preceeding the regular editorial section of this issue. In preparing such a guide, we draw upon the advice and experience of 75 or more men of the West whose daily life is devoted to promoting and selling appliances. From them came invaluable suggestions, ideas, hints.

Volumes of sales manual material, manufacturers' sales helps, advertising, promotion material were turned over to the editors to digest, boil down, concentrate. Many of the advisors expressed the thought that no adequate manual could be prepared in so concentrated a form as we had planned. Perhaps they are right; perhaps, on the other hand the dealer is overwhelmed by the volumes, the avalanches of such material showed upon him from all the manufacturers, and would welcome a simple digest which gave him in quick, easy reading, the *fundamentals*.

It is this that has been attempted in this number. And because at least its intent is worthwhile and the effort brave, ELECTRICAL WEST will welcome suggestions for its improvement in future editions of such a guide to the selling of appliances. The real test of its usefulness will come, however, only from *use*. Of that we hope to be told by those who do see its possibilities and put them to the test.

For a long time the busy merchandiser has hummed his own theme song, "Sing Something Simple." Those who think it through will find this guide not only simple, but more important, *sound*. Like our Customer Sales Manual of two years ago, the basic idea is that of what the customer wants of our appliances.

News of Note + + +

Central Valley Project Awarded $20,000,000

With the approval by the President of an allotment of $20,000,000 to the Bureau of Reclamation for construction of the first unit of the Central Valley Water project in California, Walker R. Young, supervising engineer during the construction of Boulder Dam, has been assigned to the project as engineer in charge. He will leave Boulder City immediately to undertake the signing of the necessary repayment contract and obtaining of rights-of-way.

The $170,000,000 water conservation project for the San Joaquin and Sacramento river basins will be broken down into units to provide an orderly construction program fitting WPA regulations which require completion within the allotment of useful units of any project. In a recent trip to California, Dr. Elwood Mead, Reclamation Commission, after investigations in the field, said a dam at Friant on the San Joaquin River probably would be the principal work undertaken. This dam is estimated at $14,000,000.

Other independent units of the project which might be included in the $20,000,000 allotment are the Contra Costa Conduit designed to provide fresh water to the cities in the Suisun Bay area, costing $2,500,000; the Madera Canal, costing $1,500,000; the Friant-Kern Canal, $4,500,000 and a steam stand-by plant and transmission line to supplement the proposed hydroelectric plant at Kennett on the Sacramento River, $3,500,000.

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Utah Power Announces "Half-Off" Rates

New promotional rates of the objective type, together with a modification of the "half-off" plan have been announced by the Utah Power & Light Co. to take effect after Oct. 1, 1935. The new schedules apply to all customers of the company in Utah and Idaho, according to George M. Gadsby, president.

On the half-off plan a 50 per cent discount on all kilowatt-hours used in excess of those used during the corresponding month in the 12-month period ended with meter readings in June, 1935, will be allowed. In addition, the present residential lighting schedules have been changed by lowering the second block of the rate to 4c per kw.-hr. after the use of 86 kw.-hr. in any one month served. In the residential refrigeration rate all energy in excess of that included in the room charge plus 76 kw.-hr. at 4½c will be 4c per kw.-hr.

Simplified objective residential and commercial schedules also have been announced. Customers in cities above 15,000 population who increase their use will be billed at the rate of 90c for the first 11 kw-hr., 5c for the next 25 kw.-hr., 2½c for the next 164, and 1½c for all additional. In smaller cities and rural territory, the minimum is increased to $1 for the first 11 kw.-hr.

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San Francisco Undecided on Next Hetch Hetchy Step

Further conferences with Secretary of the Interior Ickes regarding partial distribution of Hetch Hetchy power as the result of his order declaring illegal the existing agency contract between San Francisco and the Pacific Gas and Electric Co., will be attempted by officials of San Francisco.

Plans under consideration include leasing a portion of the private utility's distribution system; leasing or condemning the entire system serving the city; issuance of revenue bonds for purchase of a portion of the system or construction of a competing system; or construction of the Red Mountain Bar hydro plant, a transmission line from Newark and a partial distribution system.

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M.W.D. Lets Contracts For Boulder Transmission Line

Contracts aggregating $1,561,705 have been let by the Metropolitan Water District for its 237-mile, 230-kv. line from Boulder Dam to the pumping plants along the Colorado River aqueduct. Total cost of the line, which will ultimately carry 36 per cent of the energy generated at the Boulder Dam plant, will be $2,266,204.

Principal item in the awards was for conductor, the contract being let to the Aluminum Company of America for $614,316.98. Bids on A.C.S.R. were $187,394 to $257,162 lower than copper. However, approximately ten miles of the line will be copper, Anaconda Wire & Cable Co. having been awarded a contract for $37,246.71.

Contract for construction of the line was awarded to Fritz Ziebarth, Long Beach contractor, on a bid price of $407,246.71. Towers will be furnished by the Pacific Coast Steel Co. on a bid of $402,300.36.

Newberry Electric Co., Los Angeles, was awarded a $73,690 contract for the construction of 147 miles of new telephone line along the aqueduct. Including materials and right-of-way, these new communication facilities will cost $101,749.

P.C.E.A. Conclave Dates Changed

Dates for the fall conclaves of the Pacific Coast Electrical Association as announced in the September issue of ELECTRICAL WEST have been reversed with the Los Angeles meeting set for October 17 and 18 at the Edison Co. auditorium and the San Francisco meeting set for October 24 and 25 at the Clift Hotel.

No changes have been made in the method of handling the programs wherein each branch of the industry will submit one or more problems for general discussion from which the final eight problems will be selected for solution by the entire membership.

The programs will be in charge of the following guidance committees:

Operating Economics Section:

K. B. Ayres, San Diego Consolidated Gas & Electric Co., chairman
A. W. Copley, Westinghouse Electric & Manufacturing Co., vice-chairman

Northern Division:

A. J. Jones, General Electric Co.
S. J. Lisberger, Pacific Gas and Electric Co.
D. D. Smalley, San Joaquin Light & Power
A. E. Strong, Coast Counties Gas & Electric Co.
Clyde Chamblin, Electrical Contractor, San Francisco
R. W. Wiley, Department of Electricity, San Francisco

Southern Division:

R. G. Boyles, Southern California Edison Co.
R. H. Halpenny, Southern Sierras Power Co.
G. A. Riley, Los Angeles, Gas and Electric Corp.
R. E. Cunningham, Farnham and Cunningham, Los Angeles
J. O. Case, Electrical Contractor, Los Angeles
R. H. Manahan, Electrical Inspector, City of Los Angeles

Business Development Section:

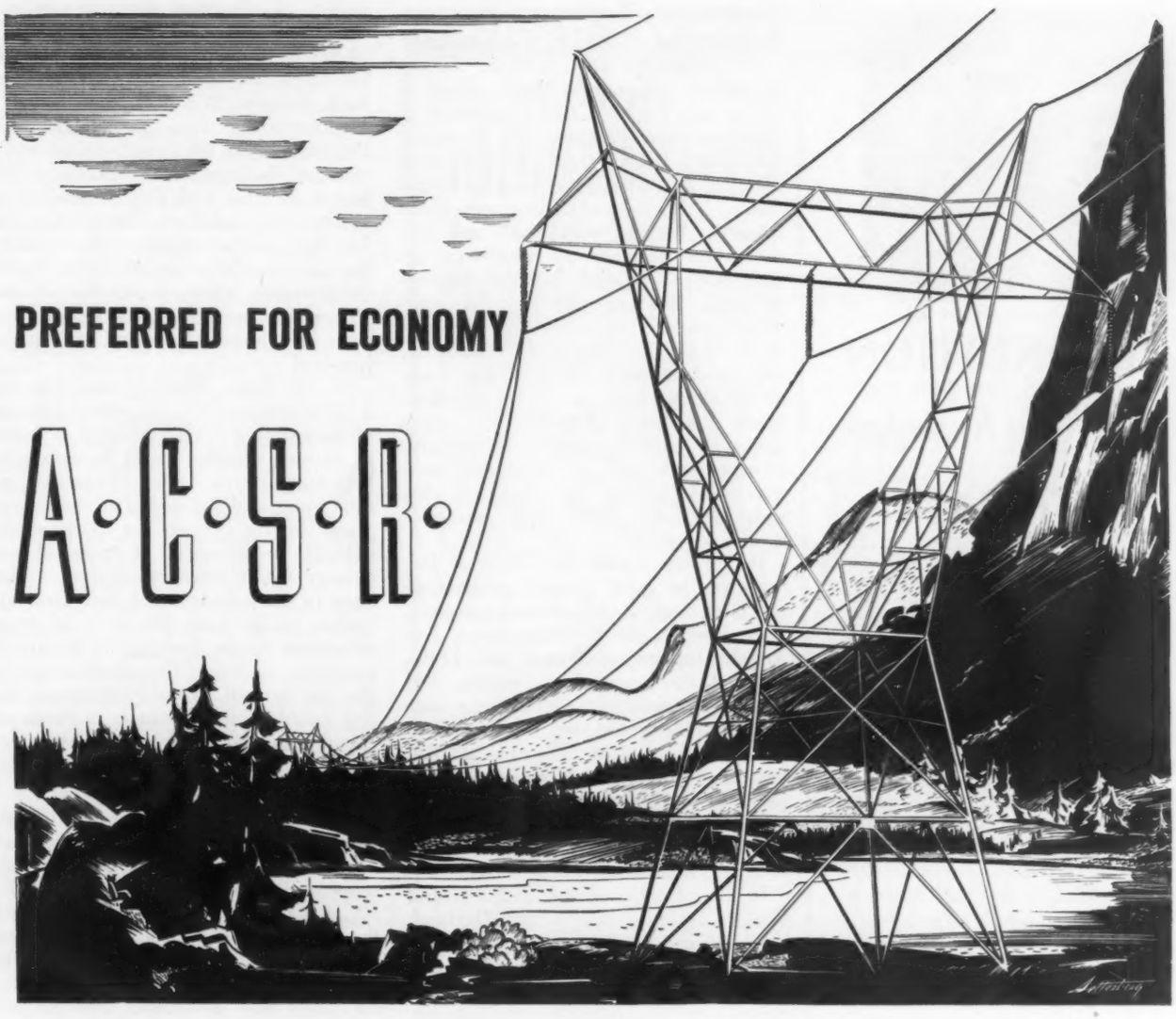
W. C. McWhinney, Southern California Edison Co., chairman
A. H. Nicoll, Graybar Electric Co., Inc., vice-chairman

Northern Division:

W. P. L'Hommedieu, Westinghouse Electric & Manufacturing Co.
H. N. Carroll, Pacific Gas & Electric Co.
H. H. Courtright, Valley Electric Supply Co.,
C. W. Goodwin, General Electric Supply Corp.
Les Seibert, Drendell Trumbell Co.
W. G. B. Euler, Pacific Gas and Electric Co.
J. E. Crilly, General Cable Corp.
Kurt Steindorff, General Electric Co.
Grover Anderson, Harvey Hubbell Co.
R. W. Kimberlin, Graybar Electric Co., Inc.
Larry Marks, Charles Brown Co.
H. J. Newton, National Electric Products Corp.
Louis Douatt, Buzzell Electric Works

Southern Division:

P. P. Pine, San Diego Consolidated Gas & Electric Co.
H. H. Fogwell, Thermador Electrical Manufacturing Co.
D. C. Pence, Westinghouse Electric Supply Corp.
E. P. Markee, General Electric Co., Incandescent Lamp Dept.
George Black, Electrical Contractor, San Bernardino
F. Snodgrass, Electrical Dealer, Oxnard



● The economies of A.C.S.R. go even further than those considerable savings in line cost which are made possible by superior strength-weight ratio, and by demonstrated savings in time and cost of stringing.

Time, itself, has put an incomparable valuation on the *reliability* of A.C.S.R. transmission lines. A.C.S.R. stringing stresses leave a high margin of safety. And the very composition of the cable itself is protection against the hazard of destructive flashovers. The steel core is protected by the Aluminum strands, and they, in turn, get only surface burns, because arcs striking Aluminum are unstable.

We have tried to make the letters A.C.S.R. mean more than the best conductor. They typify, as well, a service to the industry. As a part of that service we offer the only complete vibration dampening technique, together with accessories for any and all types of lines. These include both armor rods and the Stockbridge Damper.

The co-operation of our engineers is always at your service. ALUMINUM COMPANY OF AMERICA, 1832 Gulf Building, Pittsburgh, Pa.

ALCOA ALUMINUM

RECONDITION

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DON'T WAIT as one company did, until the recording pens of your faithful old Bristol's Recorders are worn down to a blunt edge by long years of service. Recondition them now. Give them new life to serve you for many years to come.

If your processing today is carried out at temperature or pressures different from the ranges for which your Bristol's were originally installed, re-standardization is recommended.

The fee for this service is so modest that it will appeal to you. Just pack recorders carefully and ship to 311 Minna St., San Francisco. Send order to nearest branch office.

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TRADE MARK

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Variety of Topics Feature of A.I.E.E. Program

Practicability plus a wide variety of subjects covered by the program of the annual Pacific Coast convention of the American Institute of Electrical Engineers, marked the recent Seattle meeting as one of the best in recent years. A representative attendance from the Western states made valuable discussion possible by providing an interchange of ideas between various sections. The general convention committee under the leadership of Prof. A. E. Loew, University of Washington, ably assisted by L. B. Robinson, General Electric Co., and G. H. Walker, Great Northern Railway Co., vice-chairman and secretary respectively, provided not only an interesting and worthwhile business program but also well planned and unusual entertainment features.

In the first session the electrical features of the great federal projects of the West were described in the papers. The paper of E. F. Scattergood, Los Angeles Bureau of Power and Light, outlined the engineering studies and laboratory research which were conducted to determine the design of the Boulder Dam-Los Angeles 287-kv. transmission line. A supplementary paper by E. B. Eby, of the General Electric Co., described a new carrier current coupling capacitor being used for relaying, communication and control.

In describing progress on the Grand Coulee development, A. F. Darland, U. S. Bureau of Reclamation, outlined in detail the trouble encountered due to slides on the east bank which occurred after excavating for the automobile and railway roadbeds. The material which formed the slides was entirely different from that being excavated for the roadbeds. Mr. Darland believed it must have been deposited by glacial movements in past ages. Piling could not be driven through this material when it was dry and set, whereas it developed remarkable flowing characteristics when wet. The unexpected slides necessitated the removal of a great deal more material than was anticipated. It was also necessary to construct a rock retaining wall. These slides extended up the entire side of the canyon. L. E. Kurtichanof, U. S. Engineers, described the electrical features of the Bonneville project, which development is well under way.

During the session on electrical machinery companion papers were presented by T. A. Rogers and B. L. Robertson, both of the University of California, covering test values of armature leakage reactance and tests on armature resistance of synchronous machines. The subject of steady state solution of saturated circuits was covered in a paper by Sterling Beckwith, of the Metropolitan Water District. In his discussion of Mr. Beckwith's paper, L. A. Kilgore, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., stated that the term "equivalent reactance" is intended to represent the actual machine with fixed excitation in steady state stability calculations. He felt that such a reactance may be very useful, especially in stability studies on a system where a number of machines are involved. He pointed out some of the problems and limitations involved.

M. D. Ross, Westinghouse Electric & Manufacturing Co., described a means of determining the distribution of losses in various machine parts by means of time-temperature tests. Discussion of this paper pointed out that the curves given in the paper are particularly valuable in the rating of electrical machinery where intermittent duty cycles have to be precalculated and drew attention to the fact that it is of great advantage to the designer of electrical machines to know the distribution of the loss as well as the total losses, for this enables him to check methods of calculation and to prove the effectiveness of certain features which are intended to reduce the losses.

Wednesday morning's session afforded the communication engineers an opportunity to review the latest developments in their field. C. W. Hansell, R.C.A. Communications, Inc., discussed the use of resonant lines for the control of vacuum tube oscillators for radio frequency signals. Concentric conductor lines and associated temperature problems were also covered. The ultra-high frequency inter-island radio telephone system which joins together the islands of Hawaii was described in a paper by Mr. Hansell and W. I. Harrington, of the Mutual Telephone Co. of Hawaii. An unique system of two-way telephone contact with harbor craft in the Puget Sound area from a single land station was described in the paper of E. B. Hansen, of the Pacific Telephone & Telegraph Co.

Four excellent papers were presented during the session on electro-physics, instruments and measurements on Thursday morning. The paper by R. W. Sorenson, J. E. Hobson and S. Ramo, of California Institute of Technology, outlined the very accurate work being done with sphere gaps in measuring high voltages, where the spheres are held at a separation greater than spark-over distance.

In their paper, C. M. Foust and J. T. Henderson, General Electric Co., described the development of a new instrument to measure surge crest cur-

rents directly. Another instrument which provides acceptable accurate measurement of radio interference field strength was described in a paper by F. O. McMillan and H. G. Barnett, Oregon State College.

Various selected subjects were covered in Friday morning's session. P. L. Bellaschi's paper presented a review of available data on the magnitude and effects of lightning stroke currents and described the laboratory experiments which were made to check these effects.

E. C. Starr, Oregon State College, stated that he considered Mr. Bellaschi's paper to be very complete. He outlined the results obtained to date with experimental lightning rod installations at vulnerable points on mountain tops near the Oregon Agricultural College. Only rarely is a stroke severe enough to fuse No. 14 copper wire. In some instances lightning discharges have fused No. 26, No. 24 and No. 22 wire but failed to fuse No. 20. A number of series gaps were bridged with these various sizes of wire in making these tests. He stated that the degree of fusion is determined by the square of the current times the time. He felt that knowledge of the ratio of severe strokes to weaker strokes is very important, the range of strokes being quite well known but their distribution as to severity being far from well known.

Another paper of wide practical value was that of C. R. Reid, Shawinigan Water and Power Co., which described the several types of equipment available for the production of steam from electric energy and outlined the field of application for such equipment.

In his paper, F. M. Starr, of the General Electric Co., gave a discussion of the control of water heater load during offpeak periods. He showed the more economical control to be time switch with low concentration of water heaters ers and carrier current with high concentration.

A discussion by J. S. Parsons, Westinghouse Electric & Manufacturing Co., East Pittsburgh, pointed out that while carrier current equipment should be quite reliable, there is always the possibility that it may fail just as any other equipment and when it does a large number of water heaters will be affected, whereas the failure of a time switch affects only one heater. He feels that to justify carrier current control its greater flexibility must make it possible to reduce the new investment in the power system necessary to carry the water heater load below that required when using time switches, sufficiently to offset the greater investment in control equipment. Time switch control has the disadvantage that all time switches must be reset after a power outage.

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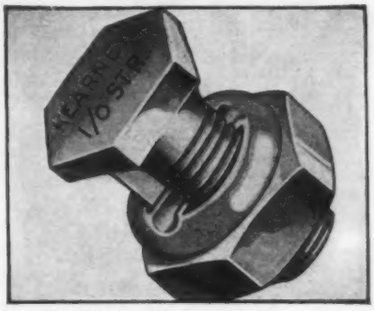

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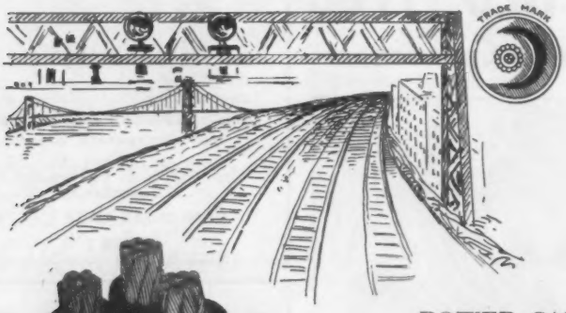

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K. W. Kissick Elected Head Of Rocky Mt. Association

Rocky Mountain Electrical Association's third annual conference at Estes Park, Sept. 9, 10, 11 was attended by 250 delegates and utility representatives from fourteen states. The "clinical" procedure in meetings almost eliminated set speeches, and resolved the affair into a series of round-table conferences where subjects for discussion were assigned, and discussion leaders appointed.

George H. Gadsby, president of the Utah Power and Light Co., Salt Lake City, touched on "New Difficulties and Greater Opportunities" at the first day's afternoon session, following an address on "Current Public Utility Questions" by H. S. Bennion, assistant managing director, Edison Electric Institute.

The evening of Sept. 9 saw presentation to W. N. Clark of the citation, and diamond-studded gold medal-charm awarded for 1935's outstanding contribution toward advancement of the electrical industry in Colorado, New Mexico or Wyoming. Mr. Clark, president of Southern Colorado Power Co., received the award from Gaylord B. Buck, retiring president of R.M.E.A., who stressed the fact that the award represented the highest honor which could be conferred by the Rocky Mountain region's electrical industry.

I. E. S. lamps, in conjunction with "Better Light, Better Sight," were much in evidence, both as equipment at convention headquarters, and as a topic for promotional plans being developed by utilities and private dealers. Electric range promotion was another important subject to occupy the "clinic's" attention; also plant rehabilitation; programs for financing large investments in plants and equipment; and the "half price electricity" plan now effective with Western Colorado Power Co. and Southern Colorado Power Co.

Officers elected at the convention's closing session are: K. W. Kissick, Trinidad Electric Transmission, Railway and Gas Co., president; A. H. Heitzler, Public Service Co. of Colorado, O. B. Summers, New Mexico Power Co., and J. H. Jacobucci, Utah Power and Light Co., vice-presidents; W. C. Sterne, Arvada Electric Co., treasurer, and George E. Lewis, secretary.

A note of high optimism and confidence was sounded by practically all those who took prominent parts in convention procedure. The large capital expenditures outlined by utility executives for the remainder of 1935 and 1936 was regarded as substantial testimony that uncertainty and indecision have been relegated to a limbo of unpleasant memories.

Coeur d'Alene Loses Municipal Plant Fight

Plans of the city of Coeur d'Alene, Idaho, to go into the municipal power business were blasted recently when Judge C. C. Cavanah, of the United States District Court, ruled at Boise that the arrangements to finance the project should not be approved.

Judge Cavanah decreed that the city be perpetually enjoined from entering into a proposed contract for construction of a Diesel engine generating plant and an electric distribution system and that Harold Ickes, Washington, D. C., federal administrator of public works, be permanently restrained from making a loan of $337,580 for the power plant and system. In December, the city of Coeur d'Alene asked the PWA for $650,000, of which $337,580 was for the electrical project and the balance for a water system.

The Washington Water Power company, which now serves the city with both electricity and water, brought suit and a temporary injunction was granted. In its suit the power company brought out that it had invested $5,000,000 in construction and improvement of its electric facilities in Idaho and that it was rendering adequate service at reasonable cost.

Judge Cavanah's decree said, in part, "The plaintiff is the owner of a valuable franchise and property in the city and pays large sums as a taxpayer and, as such, its franchise, which is a property right, is within the protection of the United States Constitution against illegal competition and destruction, and so, as a taxpayer in the city, it is immediately in danger of sustaining direct injury and has a right to restrain the city from taking illegal steps.

"Congress would have no authority to appropriate or grant authority to devote national funds to enable the city to construct and operate a municipal electric plant for the generation and distribution of electricity, except in instances specifically granted by the Constitution, of which the proposed loan and grant is not one.

"The power to tax and appropriate public moneys of the United States is restricted to purposes national in character and not matters of local benefit. Although the evidence convinces me that the proposed plant cannot be constructed for the amount voted by the electors of the city and, therefore, no authority is given the city to construct the plant under the proposed contract with the United States it will cost more than the amount authorized by the electors of the city ($300,000 for the electric plant, $300,000 for the water plant) and the financing of the proposed enterprise violates section 3, article 8, of the state constitution, for the amount of the cost thereof has not been sanctioned by the electors of the city as required by the provision of the state constitution."

Judge Cavanah stated that the question was one that did not require a decision. The city of Coeur d'Alene plans to appeal to the federal circuit court and, if necessary, to the United States Supreme Court.

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ADDITIONAL REFINANCING has been announced by the Southern California Edison Co. Ltd. to the extent of $57,500,000. S.E.C. registration applications have been filed covering $30,000,000 of first and refunding mortgage 4 per cent bonds, due 1960, and $27,500,000 of 2½ and 3½ per cent debentures, maturing in one to ten years. The proceeds of these issues will be used to refund $29,300,000 of refunding mortgage 5 per cent bonds, due 1954 and $24,000,000 of 7 per cent preferred stock.

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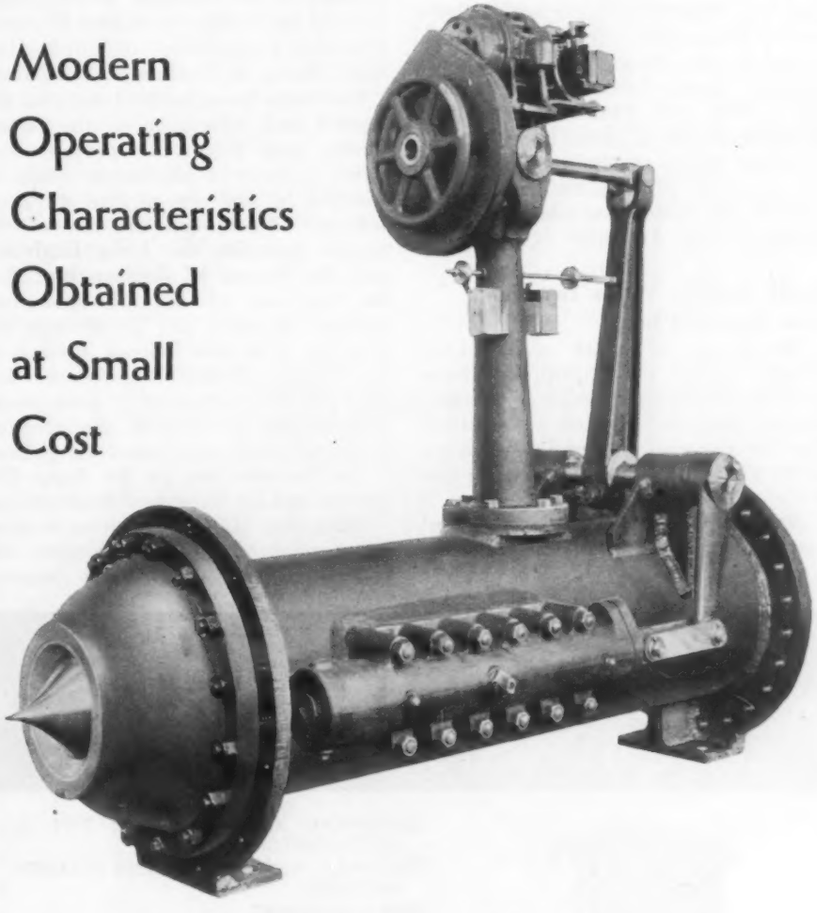
• PLANS are being discussed by the Seattle Lighting Department for refunding $6,400,000 of outstanding City Light bonds on the sale of $800,000 in new utility bonds.

Modern Operating Characteristics Obtained at Small Cost



This modern, high efficiency straight-flow nozzle, together with a runner of latest design, was practically all the hydraulic equipment needed for modernizing a thirty-year-old plant in California. From the standpoint of power output, operating cost, efficiency and safety, the modernized unit is far superior to the original installation, reconstruction costs having been comparatively insignificant.

Further details on this and other rehabilitated plants may be readily secured from Pelton engineers.

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E.E.I. to Participate in Constitutional Test Cases

Outstanding figures in the legal profession have been retained by the Board of Trustees of the Edison Electric Institute to act for E.E.I. in cases involving the constitutionality of recently enacted statutes. John W. Davis, of New York, has been retained to participate in the conduct of the case or cases which will contest the validity and constitutionality of the Public Utility Act of 1935.

Newton D. Baker, of Cleveland, has been retained to participate in the constitutionality of the gift and loan of Federal money to induce or enable municipalities to compete with private power companies now rendering sufficient service throughout the United States. Forney Johnston, of Birmingham, Ala., and James M. Beck, of Washington, D. C., have been retained to argue before the Supreme Court in the case now pending the constitutionality of the Acts under which the Tennessee Valley Authority is operating.

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Lodi, Calif., Votes Bonds For Hydro Plant

By a vote of 1,306 to 578 Lodi (Calif.) passed a $466,000 bond issue on Sept. 12 for the erection of a hydroelectric plant on the Mokelumne River for the purpose of supplying energy to the city's municipal distribution system. The bonds will supplement a $130,000 PWA grant, making the total cost of the plant and 27-mile transmission line $596,000.

For many years the city has purchased energy wholesale from the Pacific Gas and Electric Co. at the rate of $60,000 annually. City Engineer Clinton Henning announces the plant will be erected by contract and that it will be completed within six months after work is started.

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Columbia Valley Authority Flayed at Hearing

That residents of the Inland Empire do not want a Columbia Valley Authority established to control development in the Columbia River drainage area was the concensus of opinion expressed at an informal hearing held here by the Pacific Northwest Regional Planning Commission, of which Marshall Dana, of Portland, is chairman.

Chairman Dana pointed out that the control and operation of the Grand Coulee and Bonneville projects and future projects of like nature could be handled in any one of five ways, as follows: 1—through the use of the present agencies, the Army Engineers and the Bureau of Reclamation; 2—the selection of one of these two agencies to carry on; 3—through the creation of a new bureau similar to the Ontario Hydro Commission; 4—through the creation of a government corporation; 5—through the creation of an advisory commission along lines to be recommended by the Army Engineers and the Bureau of Reclamation.

More than 100 persons from various communities of eastern Washington and northern Idaho attended the hearing and, almost without exception, they were opposed to the establishment of a CVA, although T. A. Walters, first assistant secretary of the interior, declared such a move was being seriously considered by President Roosevelt. The opinion was expressed that a coordinating rate fixing agency would be necessary to allocate power from Grand Coulee and Bonneville at a cost that would attract industries to the region.

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• Los Angeles Bureau of Power and Light has been authorized by the city's Board of Water and Power Commissioners to make capital expenditures of $258,440 for additions to the municipal electric system. The work was started during September. Included in the program were overhead and underground high and low voltage additions, betterments and replacements, $161,000; installation of circuit breakers, $34,500; construction of commercial office at Fifty-ninth St. and Vermont Ave., $19,000; telephone line and switchboard equipment, $12,800.

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• Rate Reductions aggregating $137,000 per year have been authorized by the California Railroad Commission in the Imperial and Coachella Valleys served by The Southern Sierras Power Co. A 10 per cent reduction became effective Oct. 1 on schedules for general lighting service, general power service, combination lighting, ornamental lighting, street lighting and intermittent power service.

●

• Seattle City Light Department's new $500,000 building on Third Avenue was officially dedicated on Sept. 16. The new structure houses all City Light central activities, including modern display rooms for showing electrical appliances, a model electric kitchen and better lighting facilities. A double basement will house a downtown substation. The building, which is two stories, is designed to accommodate an addition of 24 stories.

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• Rate Reductions have been announced by the Arizona Edison Co. in Florence, Casa Grande, Coolidge, Bisbee and Douglas, Ariz. The new schedules affect all classes of service and include a combination rate in the first three cities. In the last two they apply only to the existing combination rates.

●

• An Experimental 4-mile stretch of sodium-vapor lights to combat heavy winter fogs is to be installed on the highway south of Tacoma in Pierce County, Wash. If found satisfactory, the lighting system will be extended to other fog-bound stretches of highway as funds are available.

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...about People

Retirement of Northmore Results in Promotions

Upon the retirement of E. R. Northmore from active service with the Los Angeles Gas and Electric Co., Los Angeles, Calif., effective Sept. 1, George A. Riley, formerly Mr. Northmore's assistant, becomes superintendent of electric distribution, according to Addison B. Day, president and general manager of the company. L. A. Buese, formerly electrical protection engineer, becomes assistant superintendent of electric distribution, while G. M. Babcock steps into Mr. Buese's former position, and J. C. McClung becomes overhead electrical engineer.

Mr. Northmore, who has completed forty-two years of service with the company, became superintendent of electric distribution in 1902. He ha played an important part in the company's development. Mr. Northmore is a member of the Electric Club of Los Angeles, and of the Joint Technical Society, is past vice-president and fellow of the American Institute of Electric Engineers, past chairman of the Los Angeles Chapter of the same organization, and has been president of the Joint Pole Committee from 1914 to the present time.

Mr. Riley joined the corporation in March, 1905. He was graduated from the School of Electrical Engineering, University of Illinois in 1904. He was born Jan. 9, 1879, at Lewistown, Ill., where he attended the grammar and high school. Immediately following his graduation from the University of Illinois, he was employed to operate the small privately-owned electric plant at his home town of Lewistown, remaining there until January of 1905.

First employed in the electrical distribution department of the Los Angeles Gas and Electric Corp. as a groundman, Mr. Riley held various positions until February, 1924, when he was appointed assistant superintendent of electric distribution, which position he held until appointed superintendent to succeed Mr. Northmore. Positions he held previously included foreman of the meter test department, foreman of substation design and construction and electrical engineer, overhead department.

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• PIERRE VINET, one time commercial manager of the Coast Counties Gas and Electric Co. and later division manager of the same company at Pittsburg, is now new business supervisor of the Kansas Electric Power Co. at Parsons, Kansas.

Hawley Promoted in Edison Organization

George M. Hawley has been appointed assistant new business manager of the Southern California Edison Co. Ltd., according to an announcement by R. C. McFadden, manager of the New Business Department. Mr. Hawley joined the commercial department of the Edison company in 1928 as industrial heating engineer and subsequently added to his responsibilities the supervision of agricultural sales, commercial and industrial air conditioning and commercial cooking. The expanding new business activities of the Edison company, together with aggressive plans for the future, necessitated a further increase in his responsibilities.

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• G. N. HOFFMAN, for many years with Graybar Electric Co. as merchandise manager at Denver, Salt Lake and El Paso, has recently started an agency business at 1863 Wazee St., Denver, merchandising high quality electrical products in the states of Colorado, Wyoming, Utah, Idaho, New Mexico and western Nebraska.

• H. G. ERSTROM has been appointed sales promotion manager of the Leo J. Meyberg Co. of California, distributors of R.C.A. Radio and Norse Refrigerators and other appliances. Mr. Erstrom is a national figure in the radio industry, having been executive secretary of the Federated Radio Trade Association since its organization in 1927. He was executive vice-president of the resulting National Federation of Radio Associations and the Radio Wholesalers Association.

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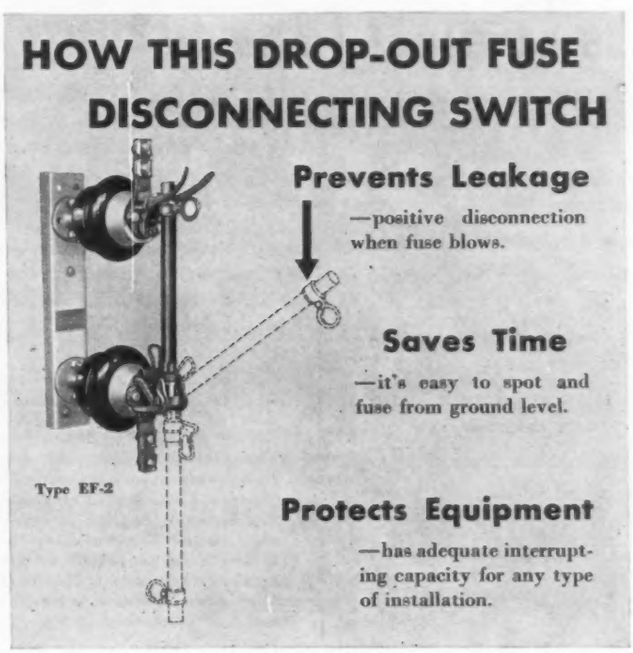
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—has adequate interrupting capacity for any type of installation.

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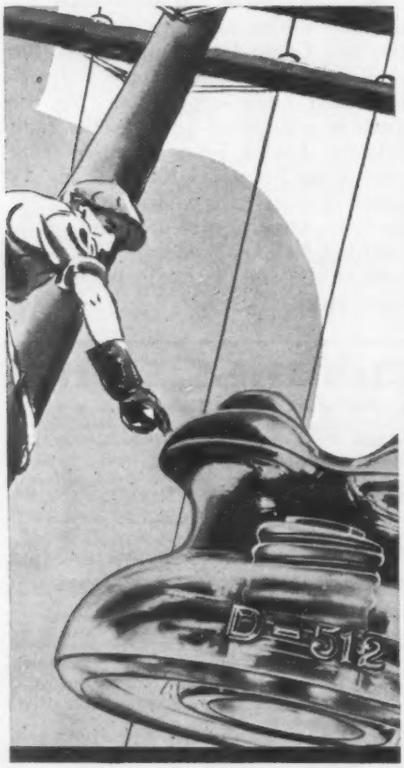

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Ross Goes to SEC Koiner to PWA

C. W. Koiner, city manager of Pasadena, has been appointed chief consulting engineer of the Public Works Administration power division in Washington, D. C., taking the place of J. D. Ross, manager of the municipal light and power department, city of Seattle, Wash., who has been named a member of the Securities and Exchange Commission by President Roosevelt. Mr. Koiner, for many years manager of the Pasadena municipal light and power department, was at one time district manager of the South Bay territory of the Southern California Edison Co.

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• SEVERAL WESTERNERS were named in the Westinghouse refrigerator campaign contest as among the leaders. Dave Salsbury, Westinghouse Electric Supply Co., Salt Lake City, was second high in the "Call to Colors" campaign. S. L. Hall, Electric Supplies Distributing Co., San Diego, won third place, D. C. Pence, Westinghouse Electric Supply Co., Los Angeles, finished fifth and J. T. Templeton, Colvin-Templeton Co., San Francisco, was in sixth place in the campaign. Clem Porter, of LaMotte & Callaway, San Diego, also won honors.

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• JOE PATELLO, for some years connected with the electrical industry and one of the former owners of the Pacific Electric Motor Co., of Oakland, which he originally organized with Walter Vance, died Sept. 4 at the age of 43. During the past few years, since selling his interest in the company to Frank Boyd, he has been connected with the Bank of America.

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California refrigerator salesmen are in the money this year. First, one of the salesmen for George Belsey in Los Angeles, won an Irish sweepstakes prize, and now J. O. Perry, salesman for Valley Electrical Supply Co., smiles from his new Ford sedan, capital prize for salesmen in the General Electric sweepstakes sales contest. In the same nation-wide contest, R. W. Downing of Valley Electric won first prize among wholesale sales managers

• W. M. ARMSTRONG, formerly with Incandescent Supply Co., San Francisco, has become connected with the Austin Brothers wholesale hardware firm of Stockton, Calif., in charge of its newly created electrical wholesale department. Mr. Armstrong is a graduate of Stanford University's illuminating engineering school.

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• ERIC A. JOHNSON, president of the Brown-Johnson Co., electrical contractor dealers of Spokane, has accepted an invitation of Senator William Gibbs McAdoo, president of the National Aeronautic Assn., to organize a unit of that association in Spokane. Its purpose is to help the national program of public education in aeronautics.

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• RALPH W. LAWLOR, for fifteen years in the accounting department of the Northwestern Electric Co., Portland, has been promoted to be manager of the customers office of that company and in charge of the company's accounting department. He was formerly supervisor of collections and credits.

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• SETH BUTLER, Weidenthal Gosliner Electric Works, San Francisco, was selected the new secretary of the Motor Dealers Association of Northern California, succeeding Kieth Noble, who recently became associated with Pacific Electric Motor Co., Oakland.

●

• J. F. SMITH, formerly sales bookkeeper in the Ventura division office of the Southern California Edison Co., has been appointed to the position of chief clerk in the company's Oxnard district office.

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...about the Trade

• STERLING ELECTRIC MOTORS, INC., Los Angeles, has announced that contracts have been awarded for the construction and installation of substantial additions to its factory and production facilities. A new modern steel factory building will more than double the present capacity. Several new rapid-production machine tools, together with dies, fixtures, and jigs will be added. Approximately $40,000 is being spent on the new program.

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• STECKEL-MOORE SEWING MACHINE Co. has expanded into the electric appliance field in Pomona and Los Angeles. Paul Steckel, known throughout the country as one of the largest dealers and wholesalers in dismantled and assembled sewing machine parts, recently moved his stock from 320 E. Meda Ave., Glendora, to 2518 Sunset Blvd., Los Angeles, and introduced a complete line of electric appliances as well. The firm will continue to conduct business from the Glendora and Los Angeles addresses as well as at 150 S. Thomas St., Pomona, where a branch store has been operating for some years.

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• BOBLETT ELECTRIC & MANUFACTURING Co., of Chico, has found an interesting side line which attracts store trade. Noting the number of stamp collectors in the vicinity, Mr. Boblett has put in a department for stamp collectors. The store also features a number of home decorations, novelties and lighting ornaments which are made in the company's own shop.

•

• WILLIAM SWARTZ, Pacific Coast manager of Standard Electric Stove Co., has announced the appointment of Frank D. Davison, 532 Washington St., Phoenix, Ariz., as the Arizona representative of Standard electric stoves.

•

• BROWN-JOHNSTON ELECTRIC Co. is remodeling its retail store in Spokane. A clearance and remodeling sale was staged to clear the premises of stock for the work to be done.

•

• DONALD K. LIPPENCOTT, HERBERT E. METCALF AND WILLIAM S. GRAHAM announce the consolidation of their offices for patent and trade mark practice at 57 Post St., San Francisco, Calif.

•

• C. R. DEDERICK, American Circular Loom representative in Portland, has announced the moving of his office from the Sherlock Building to 118 Southwest Second Ave.

• ROBERTS ELECTRIC & HARDWARE Co., pioneer electrical and hardware firm in Marysville, Calif., has an attention-getting device for window displays. It is a large ferris wheel upon which a number of small items are placed. The continuous rotation of the wheel attracts attention and window shoppers stand a long time examining the various items on display.

•

• THE L. C. TAYLOR Co. operators of one of the largest electrical appliance stores in Pasadena, Calif., has opened a branch at 127 West Main St., Alhambra. C. E. Tompkins is manager.

•

• D. NICHOLLS AND J. R. LOHOAR have registered their partnership as the Western Electric Co. at the Provincial Courthouse in Vancouver, B. C. The firm operates from 254 East 23rd Ave., Vancouver.

•

• HERBERT H. HORN, 1201 South Olive St., Los Angeles, Calif., has been appointed distributor for Automatic washers and ironers in southwestern California by the Automatic Washer Co.

•

• W. E. SMITH has opened a new store featuring housewares and electrical appliances at 619 West Main St., Alhambra.

CHROMALOX

SUPER-SPEED
REPLACEMENT RANGE UNITS

give unexampled cooking speed, plus long life, to any electric range. Produce new business for every dealer who goes after it. And protect power companies against loss of electric cooking load. Ask us for details of the tried and proven sales campaign.

EDWIN L. WIEGAND CO.
PITTSBURGH, PA.

Represented by

MONTGOMERY BROTHERS
911 Western Ave., Seattle, Wash.
524 S. W. Pine St., Portland, Ore.
61 Fremont St., San Francisco, Calif.
912 E. 3rd St., Los Angeles, Calif.

THE PETERSON COMPANY
1921 Blake St., Denver, Colo.

Crapo
GALVANIZED PRODUCTS

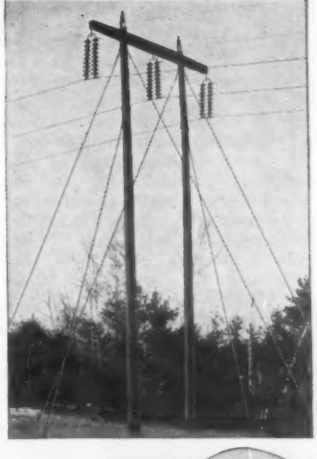
INDIANA STEEL & WIRE CO. Crapo Galvanizing MUNCIE, IND.

Specified by Leading Utilities Everywhere

The longer life and lower maintenance cost of *Crapo* Galvanized Steel Strand and Wire are matters of record with many of America's leading utilities. Time and again, these dependable products with their heavy, *pure* zinc galvanized coatings, have demonstrated their ability to resist corrosion far beyond the normal period of replacement.

That is one of the reasons why utilities from Maine to California now specify *Crapo* Galvanized Products on all new and replacement work.

Indiana Steel & Wire Co.
Muncie, Indiana



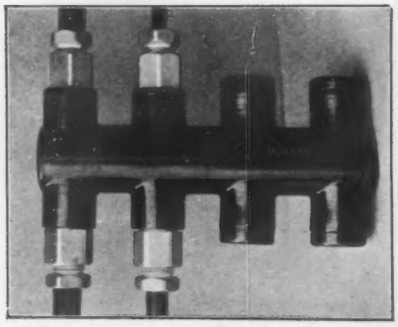
Steel Strand

• • •

Telephone and Telegraph Wire

Typical installation of Cumberland County Power and Light Co., Portland, Maine. *Crapo* Galvanized Seven Wire Steel Strand used for guying.

...in New Equipment



Burndy Underground Connector

Burndy Engineering Co., Inc., New York City, has announced the Burndy "Mole" or insulated multiple connector designed for the purpose of making joints in underground secondary distribution systems. It is especially advantageous for connections between rubber-leaded and rubber-covered cables to paper-insulated, oil impregnated cables. Cables are clamped by simple solderless devices which in turn are attached to a copper, rubber-insulated body. Each connector can accommodate a range of cable sizes.

●

Wire Splicing Machine

The James R. Kearney Corp., St. Louis, Mo., has announced the introduction of ABC Sleeves, installed by Kearney ABC Machines, designed to reduce line losses resulting from improper splicing. The ABC Sleeves are said to give extremely low resistance joints and to save wire, since joints made with the sleeves do not require overlapping of conductors. The conductors abut, end to end, at a center stop within the ABC Sleeve.

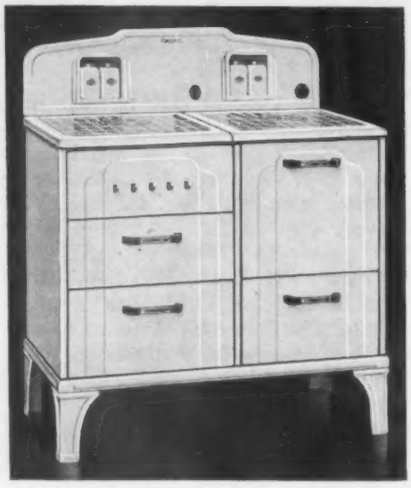
●

Illumination Analyzer

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has perfected a new illumination analyzer consisting of a light meter and combination voltmeter-ammeter with suitable cable extensions, switches and plugs in a compact case for making a complete illumination analysis. The instrument is particularly suited for illumination engineers who wish to analyze voltage and current consumption in addition to foot candle intensities and light distribution. Light output is measured with a Photox cell foot candle meter.

Occidental Electric Range

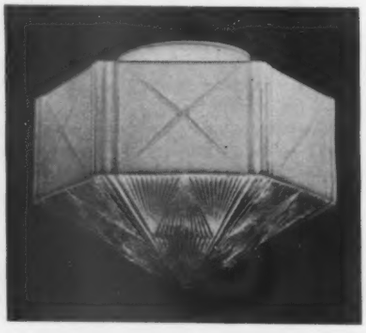
Steiger & Kerr Stove & Foundry Co., San Francisco, announces a complete line of electric ranges in the popular price field. Four models are available, all of which include full porcelain enamel finish, automatic oven heat control, four surface elements, porcelain enamel-lined oven and a choice of colors. The de luxe models have additional features and refinements. Electric timer, lamp and condiment set are optional equipment. Steiger & Kerr have for 66 years been manufacturing cooking equipment in the West under the brand name of Occidental. The range model pictured is No. 85A.



●

Crystalite Glass Unit

Crystalite Products Corp., Glendale, Calif., manufacturers of illuminating glassware, announces a new unit designed as Crystalite No. 62 for use in modern kitchens, bedrooms, small offices and stores with low ceilings. It is a one-piece glass unit, 4x9 in. with a crystal bottom. The top portion of the unit is enameled by a special process to provide an opaque reflecting surface. It carries a list price of $1.50.



●

G-E Automatic Time Switches

General Electric Co., Schenectady, N. Y., has just made available two new automatic time switches which include such features as wide adaptability, simplicity, reliability and low-cost installation and maintenance. Type T-17 will control almost any electric circuit on a schedule related to the time of day. Weatherproof for either outdoor or indoor mounting, it is designed for a.c. circuits of 115 and 230 volts. Current rating is 40 amp. per contact and a triple-pole switch enables it to handle 120-amp. split loads. Type T-27 is similar to Type T-17 except it is designed for indoor service only. In both types the drive is direct from a Telechron motor.

New Hotpoint Appliances

A wide variety of new household Hotpoint appliances for the fall have been announced by the Merchandise Department, General Electric Co., Bridgeport, Conn. Included are a new "Treasure Chest" luncheon service consisting of sandwich toaster, tray, bread board and condiment dish, listing at $9.95; two "Buffet Service" trays, one with a full automatic and the second with a semi-automatic toaster, listing at $21 and $11.95 respectively and a portable mixer at $18.75, for which a complete line of accessories including a cabinet set are available. Other appliances include two hotplates, two waffle irons, an urn set and a radiant heater.

●

Electro-Graphic Brushes For Heavy Duty d.c. Service

"SA" Series electro-graphic brushes have been placed on the market by National Carbon Company, Inc., Cleveland as the product of a four year program of research and development. Exceptional uniformity in physical properties and performance for heavy duty d.c. power service is claimed for these brushes.

●

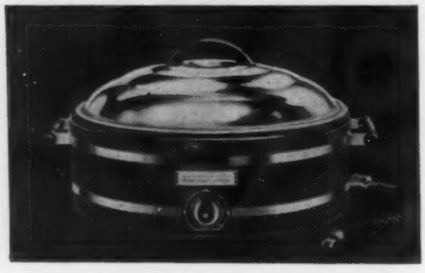
Expanded Regulator Line

General Electric Co., Schenectady, N. Y., has added a number of new ratings to its line of branch-feeder, step-voltage regulators which considerably expand the field of application of these devices. The new ratings are 25 kva. at 2,400 volts; 37½ kva. at 4,800 volts and 10, 15, 25 and 37½ kva. at 6,900 volts.

●

Westinghouse Roaster

Westinghouse Electric & Manufacturing Co., Merchandise Division, Mansfield, Ohio, has placed on the market a new large size electric roaster with automatic thermostatic temperature control. This roaster serves all cooking purposes except broiling and toasting. It has a capacity of 1,000 watts and is approximately 10x20x12 in. and finished in black bake enamel with chrome trim.



WHERE TO BUY IT IN THE WEST

Selling Hints

FOCUS THE BUYER on your listing in "Where to Buy" with a display box. This advertising SELLS goods and costs so little.

ELECTRICAL WEST
883 Mission St. San Francisco

USE NATIONAL PYRAMID BRUSHES

A GRADE FOR EVERY TYPE OF BRUSH USING EQUIPMENT

COMPLETE STOCK PROMPT DELIVERY

San Francisco Brush Finishing Plant

National Carbon Co., Inc.
Carbon Sales Division
599 Eighth St.
San Francisco, Calif.

Air Conditioning
Frigidaire Corp.
General Elec. Co.
Graybar Elec. Co., Inc.

Anchors, Guy
James R. Kearney Corp.

Appliances, Household
Apex Rotarex Mfg. Co.
Edison Gen. Elec. Appliance Co., Inc.
General Elec. Co.
General Elec. Supply Corp.
Graybar Elec. Co., Inc.
Lindemann & Hoverson Co., A. J.
Malleable Iron Range Co.
McGraw Elec. Co.
Waters-Genter Div.
Westinghouse Elec. Supply Co.

Boxes
General Cable Corp.
General Elec. Co.
Russell & Stoll Co.

Bus Fittings
Burndy Eng'g Co.
General Elec. Co.

Brackets, Wood
Locust Pin Co.

Buses
Aluminum Co. of America ..

Cable Accessories
General Cable Corp.
General Elec. Co.
John A. Roebling's Sons Co.

Cables
Aluminum Co. of America
American Steel & Wire Co.
Columbia Steel Co.
Crucible Steel Co. of America
General Cable Corp.
General Elec. Co.
Graybar Elec. Co., Inc.
Maydwell & Hartzell, Inc.
National Elec. Products Corp.
Providence Insulated Wire Co.
John A. Roebling's Sons Co.
Westinghouse Elec. & Mfg. Co.

Carbon Brushes
National Carbon Co., Inc.

Carbon Products
National Carbon Co., Inc.

Central Station Equipment
Tom Wood

Chimes
Square D Co., Inc.

Circuit Breakers
General Elec. Co.
I-T-E Circuit Breaker Co.
Westinghouse Elec. & Mfg. Co.

Cleaners, Vacuum
Apex Rotarex Mfg. Co.
Clements Mfg. Co.
Cramer Elec. Co.

Coil Winding
Jeffries Transformer Co.

Compounds, Insulating
John C. Dolph Co.
General Cable Corp.
General Elec. Co.

Condensers, Electric
Allis-Chalmers Mfg. Co.
J. G. Corrin
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Conduit
Aluminum Co. of America
General Elec. Co.
Youngstown Sheet & Tube Co.

Conduit, Underground
Fire Proof Wall Co.
Johns-Manville Corp.

Connectors
Burndy Eng'g Co.
James R. Kearney Corp.

Controllers
Clark Controller Co.

Cutouts
James R. Kearney Corp.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Demand Control
General Elec. Co.
Wesix, Inc.

Distribution Specialties
General Elec. Co.
James R. Kearney Corp.
W. N. Matthews Corp.
Maydwell & Hartzell, Inc.
St. Louis Malleable Casting Co.

Electrodes, Arc Welding
John A. Roebling's Sons Co.
General Elec. Co.

Fans
General Elec. Co.

Farm Electrification Equipment
General Elec. Co.

Fittings, Conduit
General Elec. Co.

Fixtures, Lighting
General Elec. Co.
Russell & Stoll Co.
Smoot-Holman Co.

Floodlighting
General Elec. Co.
S & M Lamp Co., Inc.
Smoot-Holman Co.

Fuses
Trico Fuse Mfg. Co.

Gasoline
Union Oil Co.

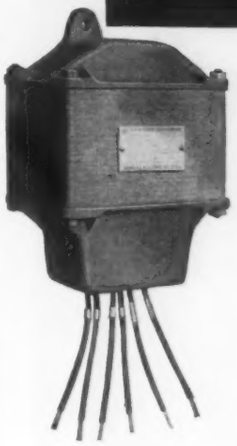
Generators
Allis-Chalmers Mfg. Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Graphite Products
National Carbon Co., Inc.

Ground Rods
Crucible Steel Co.
Maydwell & Hartzell, Inc.

WHY You Should Use G-E Air-Cooled Transformers

for
REDUCING VOLTAGE
BALANCING VOLTAGE
BOOSTING VOLTAGE
INSULATING CIRCUITS
PHASE CHANGING



1 THEY will economically provide circuits of the correct voltage or proper number of phases for the operation of your customers' equipment.

2 THEY are small, compact, and may be placed anywhere, since they require no fireproof vaults and are neat in appearance.

3 They are easy to install.

4 Service records show that they require practically no inspection or maintenance.

5 They will meet practically any requirement at 600 volts and lower.

YOU will find, too, that these transformers can be installed to advantage around your own plant or substations where low-voltage transformation is required.

May we send you a bulletin giving full descriptive and application data? Just mail the attached coupon.

GENERAL ELECTRIC

General Electric Company,
Dept. 6H-201, Schenectady, N. Y.

Please send me a copy of GEA-897E.

Name .....

Firm .....

Street .....

City ..... State .....

320-36

UNIFORMITY

IS THE OUTSTANDING CHARACTERISTIC OF
"SA" SERIES BRUSHES
FOR HEAVY DUTY D. C. SERVICE

In addition to the regular trade marks — the Three Pyramids, the Silver Strand Cable and the Grade Number — these new grades are further identified by the Double Engraved Lines (Trade Mark Registered) down the center of the brush.

THE exceptional uniformity of "SA" Series brushes — uniformity in performance as well as in physical properties — marks a definite advance in brush manufacture. It eliminates the brush variable from machine performance.

These new electro-graphitic brushes, SA-25, SA-30, SA-35, SA-40 and SA-45, are progressively graded in commutating properties and cover a wide range of application on heavy duty equipment.

Write for specific recommendation for your heavy duty D. C. service.

NATIONAL CARBON COMPANY, INC.
Carbon Sales Division, Cleveland, Ohio
Unit of Union Carbide and Carbon Corporation
Branch Sales Offices: New York · Pittsburgh · Chicago · San Francisco

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., required by the Act of Congress of August 24, 1912, of Electrical West, published monthly at San Francisco, Calif., October 1, 1935.

State of California, } ss.
County of San Francisco }

Before me, a notary in and for the state and county aforesaid, personally appeared George C. Tenney, who having been duly sworn according to law, deposes and says that he is the Editor of Electrical West, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, McGraw-Hill Company of California.....883 Mission St., San Francisco, Calif.
Editor, George C. Tenney.....883 Mission St., San Francisco, Calif.
Managing Editor .....None
Business Manager .....None
Manager.....Roy N. Phelan, 883 Mission St., San Francisco, Calif.

2. That the owners are: Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.

McGraw-Hill Company of California, San Francisco, Calif.; McGraw-Hill Publishing Company, Inc., New York City; J. H. McGraw, New York City; R. A. Balzari, San Francisco, Calif.; N. A. Bowers, San Francisco, Calif.; George C. Tenney, San Francisco, Calif.; John W. Otterson, San Francisco, Calif.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amounts of bonds, mortgages, or other securities are: None.

GEORGE C. TENNEY, Editor.

Sworn to and subscribed before me this 18th day of September, 1935.

(SEAL) WM. E. SCHORD.

(My commission expires March 22, 1936.)

Where to Buy It in the West—*Continued*

Heaters, Air
Edison Gen. Elec. Appliance Co.
Montgomery Bros.
Noblitt-Sparks Industries, Inc.
Sandoval Sales Co.
Thermador Elec'l Mfg. Co.
Wesix Inc.
Edw. L. Wiegand Co.

Heaters, Water
Edison Gen. Elec. Appliance Co.
Fowler Mfg. Co.
Lindemann & Hoverson Co., A. J.
Malleable Iron Range Co.
Sandoval Sales Co.
Thermador Elec'l Mfg. Co.
Wesix Inc.
Westinghouse Elec. & Mfg. Co.

Heating Element—Repair Part
Mend-It Sleeve Mfg. Co.
Edw. L. Wiegand Co.

Illuminating Glassware
Inland Glass Works, Inc.

Instruments, Measuring and Recording
The Bristol Co.
General Elec. Co.
Quality Elec. Co.
Roller-Smith Co.
Westinghouse Elec. & Mfg. Co.
Weston Elec'l. Instrument Corp.

Insulation
General Elec. Co.
Johns-Manville Corp.
C. D. LaMoree

Insulators
Corning Glass Works
Graybar Elec. Co., Inc.
Hemingray Glass Co.
Illinois Elec. Porcelain Co.
Lapp Insulator Co., Inc.
Locke Insulator Corp.
McLaughlin Glass Co.
Owens-Illinois Glass Co.
Westinghouse Elec. & Mfg. Co.

Ironers
Apex Rotarex Mfg. Co.
General Elec. Co.
Ironite Ironer Co.
Savage Distributing Co.
Gordon E. Wilkins

Knobs, Tubes, Cleats
Standard Elec'l Porcelain Mfrs.

Lamps, Mazda
General Elec. Co.
Westinghouse Lamp Co.

Lamps, Student
Lumidor Mfg. Co., Inc.

Lamps, Sun
General Elec. Co.

Lighting Equipment
Smoot-Holman Co.
Wuelker Flexo-Dome Co.

Line Material
Maydwell & Hartsell, Inc.

Meters
The Bristol Co.
General Elec. Co.
L. A. Nott
Sangamo Elec. Co.
Westinghouse Elec. & Mfg. Co.
Weston Elec'l Instrument Corp.

Molded Material
C. D. La Moree

Motors
Allis-Chalmers Mfg. Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Motor Starters
Allis-Chalmers Mfg. Co.
General Elec. Co.
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg. Co.

Oil, Lubricating
Associated Oil Co.
Union Oil Co.

Oil, Transformer & Switch
Associated Oil Co.
General Elec. Co.
Union Oil Co.

Panel Boards
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Photoelectric Cells
General Elec. Co.
Weston Elec'l Instrument Corp.

Pins, Wood
Locust Pin Co.

Where to Buy It in the West—Continued

Pole Line Hardware
General Electric Supply Corp.
Graybar Electric Co., Inc.
Hubbard & Company
Joslyn Co. of Calif.
Kortick Mfg. Co.
Locke Insulator Corp.
Maydwell & Hartzell, Inc.

Porcelain
Standard Elec. Porcelain Mfrs.

Public Utilities
California Oregon Power Co.
Idaho Power Co.
Mountain States Power Co.
Northwestern Electric Co.
Pacific Gas and Electric Co.
Pacific Power & Light Co.
Portland General Electric Co.
Puget Sound Power & Light Co.
San Diego Cons. Gas & Elec. Co.
San Joaquin Light & Power Corp.
Southern California Edison Co. Ltd.
Utah Power & Light Co.
Washington Water Power Co.

Pumps
Pelton Water Wheel Co.

Range Units
Edison Gen. Elec. Appliance Co.
Edwin L. Wiegand Co.

Ranges
Edison Gen. Elec. Appliance Co.
General Elec. Co.
General Elec. Supply Corp.
Lindemann & Hoverson Co., A. J
Malleable Iron Range Co.
Standard Elec. Stove Co.
Steiger & Kerr Stove & Fdry. Co.
Walker & Pratt Mfg. Co.

Relays
General Elec. Co.
Leach Relay Co.

Rheostats & Resistors
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Switches, Time
R. W. Cramer & Co.
General Elec. Co.
Sangamo Elec. Co.
Tork Clocks, Inc.

Switchgear
Allis-Chalmers Mfg. Co.
General Elec. Co.
Pacific Elec. Mfg. Co.
Westinghouse Elec. & Mfg. Co.

Tapes—Friction and Rubber
Clifton Mfg. Co.
Geo. E. Honn Co.

Terminals, Cable
General Cable Corp.
General Elec. Co.

Testing Devices
Electrical Facilities, Inc.

Tools, Live Line
James R. Kearney Corp.

Transformers
Allis-Chalmers Mfg. Co.
American Transformer Co.
E. H. Bell
Gardner Elec. Mfg. Co.
General Elec. Co.
Jeffries Transformer Co.
Pennsylvania Transformer Co.
Sangamo Elec. Co.
Western Transformer Co.
Westinghouse Elec. & Mfg. Co.

STANDARD ELECTRIC RANGES handled by
Arizona—Representative: Frank D. Davison, Phoenix. California—San Francisco: Kaemper-Barrett Corp., The Geo. H. Eberhard Co. Los Angeles: Listenwalter & Gough, Graham-Reynolds Elec. Co. Nevada—Reno: H. E. Saviers & Son. Utah—Salt Lake City: W. H. Bintz Co. Washington—Tacoma: Home Electric Co. Honolulu, T. H.—von Hamm-Young Co., Ltd.
Pacific Coast Sales Manager: WM. P. SWARTZ
629 S. Serrano, Los Angeles, Calif.

Refrigerator Parts & Accessories
California Refrigerator Co.

Refrigerators
Frigidaire Corp.
General Elec. Co.
General Elec. Supply Corp.
Graybar Elec. Co., Inc.
Malleable Iron Range Co.
Westinghouse Elec. & Mfg. Co.

Service Organizations
Elec'l Testing Labs.
Fort Wayne Correspondence School
McGraw-Hill Book Co.
Northwest Elec. Light & Power Association
Pacific Coast Elec'l Ass'n
Pacific Coast Elec'l Bureau

★ **DEPENDABLE TRANSFORMERS** ★
For Dry Type Industrial and Signal Use
***Repair Service* for distribution transformers, Auto-starters and similar equipment.**
JEFFRIES **TRANSFORMER CO., 5706 Long Beach Ave., Los Angeles**
Electric Agencies, 2059 Webster St., Oakland, California

G-E Type T-11 time switch

SAVES ON INVENTORY

THE ease with which the G-E T-11 time switch "fits" into practically any installation makes it most convenient. You carry one item in stock, and thus keep down your investment in time-switch inventory.

You also save on first cost, because this switch is reasonably priced; and you save on installation and you save on maintenance.

Let us explain how the features of the T-11 switch make these economies possible. Details and prices are given in Bulletin GEA-1669, "Time Switches for Controlled Water Heating."

●

General Electric has also developed carrier-current equipment for the control of off-peak loads. The method—time-switch or carrier-current—best adapted for a particular set of conditions is thoroughly covered by two new G-E publications: GEA-2058, "How to Control Water-heater Loads" and GES-1106, "Revenue in Off-peak Loads Properly Controlled."

●

For copies of publications mentioned above, address the nearest G-E Sales office, or General Electric, Dept. 6A-201, Schenectady, New York.

440-56

GENERAL ELECTRIC

Where to Buy It in the West—*Continued*

Strand, Guy
Crucible Steel Co.
Maydwell & Hartzell, Inc.
Pacific Wire Rope Co.

Switchboards
Allis-Chalmers Mfg. Co.
General Elec. Co.
Square D Co., Inc.

Switches, Coin Operated
Welcome Meter Co.

Switches, High Tension
Bowie Switch Co.
James R. Kearney Corp.
General Elec. Co.
C. D. LaMoree
Pacific Elec. Mfg. Co.

Switches, Meter Test
General Elec. Co.
Meter Devices Co.

Switches—Pressure and Temperature
The Bristol Co.
Garland-Affolter Eng'g Corp.

Switches, Safety
Colt's Patent Fire Arms Mfg. Co.
Meyers Safety Switch Co., Inc.
Parker Elec'l Mfg. Corp.
Square D Co., Inc.

Tubing, Elec'l Metallic
Aluminum Co. of America

Turbines
Pelton Water Wheel Co.

Valves
Pelton Water Wheel Co.

Authorized Factory Replacement Parts Service
●
Automatic, Easy, Gainaday, Horton, Meadows, Roto Verse and Universal Washers and Ironers
Parts and Rolls for All Makes
Washing Machine Parts Co.
1241 S. Hope St., Los Angeles

Washers, Clothes
Apex Rotarex Mfg. Co.
Elec't Appliance Service Corp.
General Elec. Co.
Little Giant, Inc., Ltd.
Savage Distributing Co.
Washing Machine Parts Co.

Water Wheels
Pelton Water Wheel Co.

Wire
Aluminum Co. of America
American Steel & Wire Co.
Columbia Steel Co.
Crescent Ins. Wire & Cable Co.
Crucible Steel Co.
Driver-Harris Co.
General Cable Corp.
National Elec. Products Corp.
H. B. Squires Co.
Westinghouse Elec. Supply Co.

Wiring Supplies
Associated Sales Engineers
Bryant Electric Co.
Gen. Elec. Supply Corp.
Graybar Elec. Co., Inc.
Russell & Stoll Co.
General Elec. Co.
Graybar Elec. Co., Inc.
Hart Mfg. Co.
Indiana Steel & Wire Co.
C. E. Ingalls
Maydwell & Hartzell, Inc.
Pacific Wire Rope Co.
Providence Insulated Wire Co.
John A. Roebling's Sons Co.
Westinghouse Elec. & Mfg. Co.

PARTS & ACCESSORIES
***For* SAVAGE** Washers & Dryers
● PROMPT DELIVERY
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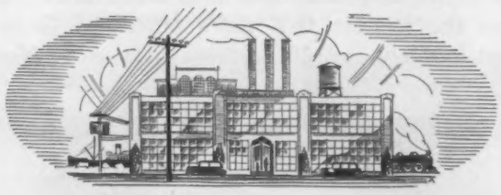

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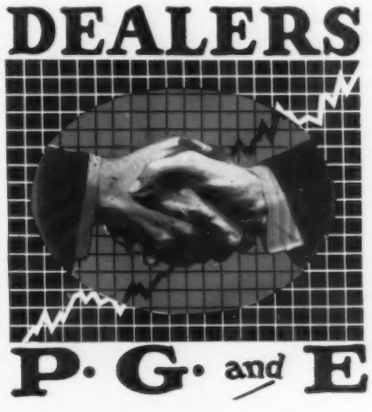
No. 4 of a series
Calling your attention to the Pacific Gas and Electric Company's 1935 planbook "In Gear".

WHAT THE FUTURE HOLDS

How big is the market for electric appliances? How soon will it reach the saturation point? What appliances offer the greatest sales possibilities? Answers to questions like these have always been hard to get. There has simply been no machinery for gathering the facts and interpreting them. Now, we are happy to say, there is. All necessary data is being supplied through our Appliance Survey. Reports are coming in at the rate of 5000 a month. As fast as they arrive, our Market Research Bureau compiles them and tabulates the figures. Already we know what is being used and also what is needed in 203,000 homes. Eventually we will "have the picture" in 443,000 homes. Of course, it will be some time before our appliance inventory is complete, but right now we have enough data in hand to make reasonably exact estimates. In fact, we had enough at the first of the year and certain estimates were made then and published in our planbook "In Gear". Under the heading "What the Future Holds" we estimated the market for (1) major appliances, (2) small appliances, (3) lighting fixtures and equipment, (4) installations. Sales were estimated both as to units and dollar volume. Separate estimates were also given for potential "new" business and potential "replacement" business. All in all, we believe we gave a fair picture of what the industry can do if it will. We earnestly hope that if you didn't read this chapter then, you'll do it now. And remember, special market data is always available on request.



EQUIPMENT DEALERS

NOTE!

You might think, from our use of the term Appliance Survey, that we're neglecting the equipment markets. We're not! Special surveys are being made of the commercial market, the industrial market and the agricultural market. To date, we have received more than 15,000 reports on factory, store and farm. If you're directing your efforts at one or more of these markets, we can assist you with a large and constantly growing fund of facts. Address General Sales Manager, 245 Market Street, San Francisco.

EW 110-1035

PACIFIC GAS AND ELECTRIC COMPANY

Owned, Operated, Managed by Californians

This Advertising pays Dividends

The three advertisements reproduced here are typical of the messages we are presenting month after month to the readers of California home and farm magazines—your customers.

This advertising pays you dividends—in the form of additional sales.

Increased sales of electrical merchandise, which means increased profits to you, have resulted from an aggressive follow-up of the coupons received from the Bureau's advertising.

The Bureau's advertising has proved that the public can be interested in "things electrical". The sale is up to you. Take advantage of this sales stimulating campaign. It will pay you dividends—profits.

Pacific Coast Electrical Bureau

447 Sutter Street
San Francisco

★

601 West Fifth Street
Los Angeles, California